

WESTERN AUSTRALIA

REPORT

of the

COMMISSIONER

of

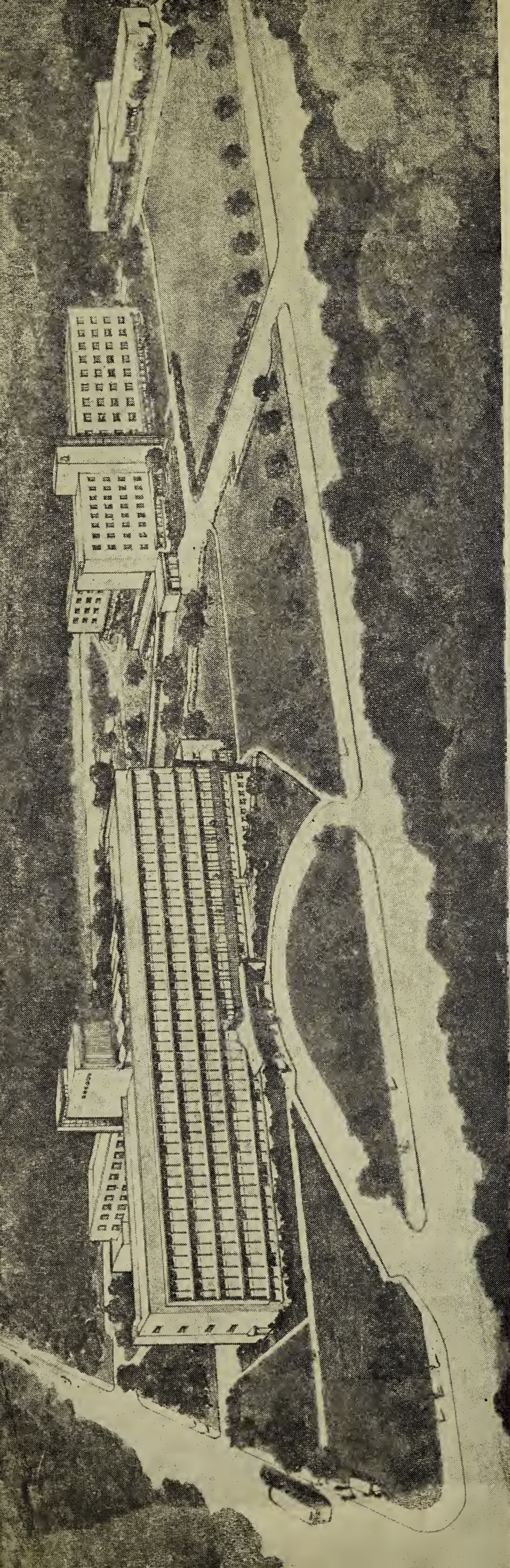
PUBLIC HEALTH

for the year 1955

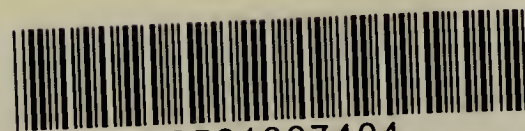
1957

By Authority ; W. H. WYATT, Government Printer, PERTH

1346/12/56



PERTH CHEST HOSPITAL
Perspective View showing
the Main Hospital, Nurses'
Quarters and Workshops
Block — Drawn by the
Department of Public Works



22501397404

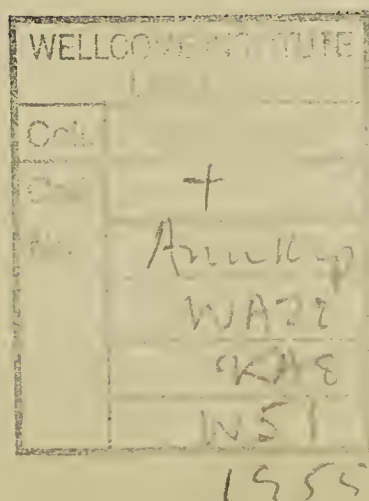
The Honourable Emil Nulsen, M.L.A.,
MINISTER FOR HEALTH



Sir,

I have the honour to submit the Report of the
Department of Public Health for the Year 1955.

LINLEY HENZELL, M.D. (London), B.Sc., D.P.H.,
Commissioner of Public Health.



contents

[illegible]

Department of Public Health



REPORT OF THE COMMISSIONER



In the course of the year there has been a further increase in the population equal to that in the previous year, namely 18,000, and at the end of the year the population was 658,747.

The death rate was 8·17 per thousand, a figure equal to that of 1953.

The birth rate was 25·23 per thousand population. Maintenance of the birth rate at this high level, combined with the low infant mortality rate (22·44 per thousand births), shows that the population of the State is on the whole vigorous and healthy and indicates sound social and economic conditions.

The natural increase rate per thousand of the population was 17·06.

MEDICAL SCHOOL.

In the course of the year, final approval was given by the Government for the establishment of the Medical School at the University of Western Australia and following a highly successful public appeal for funds, when over £500,000 was contributed, the University took the initial steps to establish the School.

At the time of writing, the University has proceeded to the appointment of occupants of certain Chairs.

It is pleasing to record that as a result of the discussions between the University and the Department, it has been agreed that the Professors of Microbiology, Obstetrics and Gynaecology, and of Child Health will also act as Consultants to the Public Health Department, which will be responsible for the payment of a proportion of their salaries. This has been done with the object of making the best advice possible available to the Department in certain important aspects of preventive medicine. The Professor of Microbiology will be intimately concerned with certain of the State's epidemiological problems. The Professor of Obstetrics and Gynaecology will be available for guidance in matters of ante-natal and maternal care, and the Professor of Child Health will be in a position to provide advice concerning the Department's work in child health. By these means, it may be anticipated that there will be a close partnership between the Public Health Department of the State and the various University departments, and that this will be not only an inspiration to the Department but of great value in the teaching of undergraduates. It is expected that it will produce important results in the future in the field of preventive medicine.

STATE HEALTH COUNCIL.

During the year 1955 the following meetings were held :

| | | | | | | | |
|--------------------------------------|------|------|------|------|------|------|---|
| State Health Council | .... | .... | .... | .... | .... | .... | 1 |
| Maternal and Infant Health Committee | .... | .... | .... | .... | .... | .... | 1 |
| Hospital Requirements Committee | .... | .... | .... | .... | .... | .... | 2 |

The Council adopted a hospital priority programme and endorsed the recommendation of the *Hospital Requirements Committee* concerning the site for a hospital north of Perth. The Council also endorsed proposals for the expansion of the Infectious Diseases Hospital, West Subiaco, for rehabilitation purposes.

It was decided to recommend that owing to the unexpectedly slow development of the Kwinana area, construction of the 50-bed hospital there should be held in abeyance.

The Council also recommended that additions be made to the King Edward Memorial Hospital ; that a commencement be made on the initial stages of the construction of a hospital in the Northern Suburbs, and that planning of the new University Hospital at Hollywood be commenced.

It was noted that a site for the new Alexandra Home for Mothers and Babies had been selected at the Collier Pine Plantation south of the river.

As you are aware, the Government has accepted these recommendations and is proceeding accordingly, insofar as the provision of Loan Funds will permit.

In the metropolitan area it should be pointed out that hospital planning by the State Health Council and the State Health Department is gravely handicapped by the uncertainty of the provision of Loan funds. Metropolitan hospitals are very costly to erect and unless the Department is assured of the future allocation of comparatively large sums of money for several years in advance, it is difficult to commence work on any hospital which may cost many hundreds of thousands of pounds. With the grave shortage of hospital beds in the metropolitan area in the next few years this problem must be faced, and a large capital outlay be guaranteed for successive years for hospital construction ; otherwise the necessary provision of new metropolitan hospital beds will be delayed, as has been the case up to the present.

It has been possible to do a considerable amount of work in the renovation and rehabilitation of country hospitals, because this work is short-term and any outlay for each individual hospital comparatively small. Work, therefore, can be done from year to year with the known allocation of funds for the current year. Major hospital construction is different and some certainty with regard to the future availability of money is needed before work on large-scale projects can commence.

The Maternal and Infant Health Committee made recommendations concerning the provision of incubators for premature babies. The Council endorsed these recommendations as follows :

1. That the Department subsidises (to the extent of at least 33½ per cent.) the purchase of one " Insulcot " (Both) plus vaporiser for each of the following hospitals :
 - Albany Maternity Hospital,
 - Busselton Hospital,
 - Collie Hospital,
 - Geraldton Maternity Hospital,
 - Kalgoorlie Hospital,
 - Vailima Hospital, Narrogin,
 - Manjimup Hospital
 - Woodside Hospital,
 - Swan District Hospital,
 - Carnarvon Hospital,
 - Merredin Hospital,
 - Stirling Hospital, Bunbury.
2. That existing " Armstrong " or " Humox " Incubators at any of the above hospitals be withdrawn by mutual arrangement and with appropriate financial adjustment.
3. That from the point of view of treating premature babies each of these hospitals be regarded as a centre for a particular district; and that premature babies from smaller hospitals within the district be transported to the centre where deemed advisable by the doctors concerned.
4. That efforts be made to obtain Accli-Bator (if approved) portable incubators when available for supply to the centres and to those small country hospitals that require them.
5. That no new " Armstrong " or " Humox " Incubators be obtained ; but that those withdrawn from the centres be offered to the smaller country hospitals subject to some contribution from the local community.
6. That arrangements be made for selected nurses from the centres to attend a week's course of instruction at the King Edward Memorial Hospital.
7. That the Department arrange for the servicing and testing (including oxygen analysis) of all incubators.
8. Financial assistance by the Department for the installation of incubators in smaller hospitals will only be given where it can be established that there is permanent trained personnel capable of operating the machines efficiently.

The Department is greatly indebted to the medical men who so freely gave of their time to serve on the Council and its committees and this opportunity is taken to express appreciation to them for their valuable assistance,

LOCAL AUTHORITIES.

No decision was made in the course of the year to implement the recommendations of the Royal Commission which enquired into the boundaries of the local authorities in the metropolitan area.

Until the number of the metropolitan local authorities has been reduced, local health administration will be handicapped by the inevitable comparative inefficiency of a large number of small units.

There is still a shortage of trained health inspectors for country areas in spite of efforts which are made to encourage a greater number of men to undertake the course of training required.

FOOD AND INSPECTORIAL STAFF.

In Appendix XVII Mr. C. E. Flower, Chief Inspector (General), outlines the work of his section.

Legislation.

Acts.—The following Acts were passed by the State Parliament during 1955. :

Health Act Amendment (No. 29),
Hospitals Act Amendment (No. 51),
Medical Act Amendment (No. 10),
Medical Act Amendment (No. 18),
University Medical School Act (No. 30),
University Medical School, Teaching Hospitals Act (No. 31).

General.

One new public analyst was registered during the year.

New model by-laws were made in relation to wrapping of food, construction of meat delivery vehicles and the clothing of operatives, and the dimensions of privies provided at schools.

The list of infectious diseases for which a local authority shares responsibility for hospital expenses was revised.

Food and Drugs.

Although only one meeting of the Food and Drug Advisory Committee was held during the year, a great deal of improvement was effected in food legislation.

The following regulations were amended to meet modern requirements and to achieve uniformity with legislation in other States :—

Preservatives.
Flour.
Canned Meat and Meat Products.
Milk and Milk Products, and
Food Colours.

Dr. N. D. Crosby was appointed as an additional member of the Advisory Committee to advise on the nutritional aspects of food standards.

In addition to the Meat Inspection Return shown in Appendix XXIV., 2,471,595 lb. of imported fish and 31,986 packages of frozen carcase meat were inspected at the Fremantle Wharf.

Many cases of improper labelling, prohibited colouring and preservative, and damaged canned food were investigated.

Pesticides.

During the last few years a large number of new, powerful and, in some instances, very toxic products have been offered for sale for the control of plant and animal pests.

In view of the health hazards that can arise from an improper use or careless handling of these chemicals, it was felt that some control must be exercised over their sale, labelling and packing and to ensure their proper and safe handling whether for agricultural, industrial or domestic use.

With this objective, the Health Act was amended and the following members were appointed as a permanent Advisory Committee to make recommendations governing the sale and usage of pesticides :—

| | | | | |
|----------------------|------|------|------|--------------------------------------|
| Dr. W. S. Davidson | .... | .... | .... | Public Health Department (Chairman). |
| Mr. J. C. Hood | .... | .... | .... | Government Chemical Laboratories. |
| Mr. C. F. H. Jenkins | .... | .... | .... | Department of Agriculture. |
| Mr. F. W. Avenell | .... | .... | .... | Pharmaceutical Registrar. |

This Committee has examined all the relevant information on present day pesticides and has prepared regulations which should be ready for promulgation early next year.

HEALTH OF THE NATIVE POPULATION.

There have been no fresh developments in the course of the year concerning the health of the native population.

Houses are now being provided for natives by the Housing Commission.

Trachoma continues to be an important problem. Professor Ida Mann, the Department's Consultant Ophthalmologist, is continuing her surveys into the incidence and distribution of this disease in the native population. Her findings are being linked with those in the Northern Territory, Papua, and the Pacific. The survey should be completed in the next year, when proposals for an organised wide-scale attack on the disease will be presented.

The Medical Officers in the Kimberleys and the North-West co-operate fully in this work, and Dr. Eksteins has submitted a report of a survey which he conducted in the Meekatharra and Wiluna districts.

PUBLIC HEALTH LABORATORIES.

Special attention should be drawn to the report of Dr. Kovacs—Appendix II.—on the work of the Public Health Laboratories during the year, which expanded rapidly.

The total number of examinations carried out was 53,949 for the year in comparison with 37,578 in the previous year, an increase of 16,371. This was made up by 11,019 for the Royal Perth Hospital and 5,352 for the Department of Public Health. Every effort has been made to provide an adequate service to the Royal Perth Hospital the needs of which have been given priority over those of the Department.

When the hospital laboratory section of microbiology is taken over by the newly appointed Professor of Microbiology and his staff, it may be expected that Dr. Kovacs will be able to concentrate on an increased amount of important and necessary work for the Public Health Department.

In his report, Dr. Kovacs shows that there is an increasing percentage of penicillin-resistant strains of the staphylococcus ; for example, in specimens submitted by the Royal Perth Hospital, while 79 per cent. of all cultures were resistant to penicillin in 1954, 83·2 per cent. were resistant in 1955.

A similar trend is being shown with regard to streptomycin ; whereas 15 per cent. of cultures were resistant in 1954, this had increased to 53 per cent. in 1955.

The relationship between the staphylococcus and antibiotics is of great public health significance, particularly in obstetric hospitals. Paediatricians are concerned with the increasing number of new-born infants with staphylococcal infections which are resistant to antibiotic treatment, and measures are being taken to overcome the incidence of these infections in our maternity hospitals as far as practicable.

In the course of the year a commencement was made by Dr. Kovacs of a survey of nasal swabs from the general population. Of 199 specimens which were taken, nearly 20 per cent. grew staphylococci and of these cultures 62 per cent. were resistant to penicillin. This work is continuing.

Attention should be drawn in Dr. Kovacs' report to his work on *Ps. pyocyaneus*, salmonella and Shigella infections. Technical improvements in the performance of blood cultures were made and the Laboratory was successful in isolating *Brucella abortus* in one case.

The syringe service for blood cultures for private practitioners was introduced and has been most useful.

A diphtheria epidemic commenced in January and taxed all the resources of the Laboratory staff. As many as 250 specimens were examined in one day. Considerable work was done on the determination of the most efficient medium to be used for the culture of *C. diphtheriae*. It was found that 83 per cent. of the positive cultures were obtained on the tellurite medium and only 48 per cent. on Loeffler's medium. Close correlation existed between the clinical and the laboratory diagnoses in almost all cases. In all, 18,384 specimens were examined, of which 250 positive cultures were obtained from clinical cases and 50 positive cases from carriers and contacts, thus showing a total of 300 bacteriologically proven cases.

A tribute should be paid to Dr. Kovacs and his staff for this concentrated work and its efficiency and also to the medical and the nursing staffs of the Infectious Diseases Hospital and to the general practitioners for their co-operation.

In the course of the year a fundamental reorganization of the tuberculosis section of the Laboratory was made. New methods were introduced, including a new blood Agar medium giving a high percentage of positive findings.

Treponemal infections.—The problem of the association of yaws and syphilis in natives in the North-West and the Kimberleys remains unsolved. In the Port Hedland area 316 blood specimens gave serologically positive results in 194, or 61 per cent. In all, of 388 specimens from northern parts of the State from natives, 56·4 were positive. Further work into this problem is necessary.

In June, 1955, Dr. Kovacs relinquished the control of the Haematology section of the Laboratories, which was then handed over to the Royal Perth Hospital. In the future, with the establishment of a new Hospital Department of Microbiology, he will be able to spend all his time on public health work. For the past five years he has had to carry the burden of Haematology in addition to his own specialty, and this has been done without the assistance of highly trained medical men. He is to be congratulated on the high standard of his work over these years.

In June, 1955, the laboratory of the King Edward Memorial Hospital was also handed over to the Board of Management of the hospital.

The justly well known work of Dr. Kelsall and Mr. Vos on problems associated with the Rh factor continued during the year.

TUBERCULOSIS CONTROL BRANCH.

The Tuberculosis Control Branch continued to operate smoothly throughout 1955.

There was a further decline in the death rate from the disease—this amounting to only 5·0 per 100,000 of the population for the year ; that for pulmonary tuberculosis alone was 4·7. This low death rate is a remarkable tribute to the work of the Branch and also to the continued co-operation of its medical colleagues in private practice, of the hospital staffs concerned, the Repatriation Commission, and of the public.

For convenience, the statistical table included in his report by the Director, Dr. Alan King (see Appendix III.) is here quoted :—

| Year. | Mean Popu- lation 1,000s. | Notifications. | | | Number on Register. | | | Prevalence. per 100,000. | | Number Receiv- ing T.B. Allow- ance. | Deaths. | | | Death Rate per 100,000. | |
|-------|---------------------------------|----------------|---------------|--------|---------------------|---------------|--------|-----------------------------|---------------|--|---------|---------------|--------|----------------------------|---------------|
| | | Pulm. | Non- Pulm. | Total. | Pulm. | Non- Pulm. | Total. | Pulm. | All Forms. | | Pulm. | Non- Pulm. | Total. | Pulm. | All Forms. |
| 1950 | 558 | 586 | 18 | 604 | 2,100 | .... | .... | 376 | .... | 515 | 125 | 3 | 128 | 22·4 | 22·9 |
| 1951 | 580 | 467 | 37 | 504 | 2,402 | 75 | 2,477 | 413 | 426 | 474 | 76 | 6 | 82 | 13·1 | 14·1 |
| 1952 | 601 | 508 | 49 | 557 | 2,574 | 94 | 2,668 | 428 | 444 | 396 | 75 | 7 | 82 | 12·5 | 13·6 |
| 1953 | 621 | 378 | 34 | 412 | 2,762 | 120 | 2,882 | 445 | 464 | 361 | 43 | 3 | 46 | 6·9 | 7·4 |
| 1954 | 640 | 348 | 34 | 382 | 2,769 | 97 | 2,866 | 432 | 447 | 326 | 57 | 4 | 61 | 8·9 | 9·5 |
| 1955 | 659 | 413 | 39 | 452 | 2,965 | 128 | 3,093 | 450 | 469 | 330 | 31 | 2 | 33 | 4·7 | 5·0 |

There was a marked increase in the number of microfilms taken. These amounted to 138,433 for the year ; the figure for the previous year being 95,258. Since may, 1948, the total number of microfilms taken is 562,600.

In the course of the year, 12,040 large films were taken, bringing the total since may, 1948 to 82,720.

The important work of the Visiting Nurses continues. By this means the Branch is kept informed of the home and social conditions of infectious patients and it is possible to control more readily the spread of infection to others.

B.C.G. Vaccination.—As in the previous year, this vaccination is confined to negative Mantoux reactions among National Service Trainees, contacts of known cases of the disease, nurses, and girls of the school leaving age group. In all, 7,000 Mantoux tests were performed in these groups; 2,600 were negative and were vaccinated.

It was necessary to take legal action under the Health Act by prosecuting two persons for failure to attend for the compulsory X-Ray examination.

Three persons with infectious disease who were not conducting themselves in such a manner as to prevent the spread of infection to others were "directed" to enter Wooroloo Sanatorium and subsequently did so.

In his report, Dr. King comments on the increase in the number of films being referred from country hospitals to the Perth Chest Clinic for opinion. Six thousand, three hundred and eighteen films were referred—this being 867 more than in the previous year. Examination of these films resulted in the detection of 25 cases of pulmonary tuberculosis and in others 71 continue under observation as suspects. An important aspect of this service is that, in addition, 23 cases of cancer of the lung were diagnosed and there were 549 other chest abnormalities.

Dr. Elphick, the Medical Superintendent of the State Sanatorium, Wooroloo, has analysed the relapse rate of the disease in cases admitted for treatment. As a result, it was considered that 44 out of 228 admissions (approximately 15 per cent.) were due to a true relapse of the disease. This rate is less than in former years.

Dr. King comments on the valuable work being done in the new Tuberculosis Block at the Claremont Mental Hospital. At the end of the year this Block contained 50 male and 24 female patients. Excellent results are being obtained from treatment. There can be little doubt that the provision of this accommodation will reduce the incidence of the disease, both in the patients in the hospital and in its staff.

After-care and rehabilitation activities continued as in previous years. It is pleasing to record the continued co-operation of the Commonwealth Departments of Social Services and Labour and Employment Service and of the Tuberculosis Association of Western Australia which manages Linley Valley and the Cardboard Box Factory. Seventy patients received the attention of these various organizations in the course of the year and, of these, 28 were placed in employment after training.

In October the extensions to the Perth Chest Clinic were officially opened by you. These additions, which were financed by the Commonwealth Government under the Tuberculosis Agreement, will enable more work to be done more efficiently.

The erection of the new Chest Hospital at Hollywood continues according to schedule. It is due for completion towards the end of 1957.

It is interesting to note in the report of the Tuberculosis Physician, Dr. Heymanson (*see* Appendix IV), that the incidence of tuberculosis in the adult population as revealed by mass radiography is 0.11 per cent. This represents a decline in comparison with previous years. There can be little doubt that unsuspected cases in the population at large are becoming less as the result of the work of the Branch over the years.

COMMUNICABLE DISEASES.

In the report of the Epidemiologist, Dr. Snow (*see* Appendix VII), emphasis is placed on the epidemic of diphtheria which occurred in the course of the year. There were 480 cases with six deaths, these being the highest figures for the past ten years.

It is extraordinary that in spite of the repeated publicity and propaganda, immunisation is not more widely practised than it is. In other countries and other States of Australia immunisation on a voluntary basis has been sufficient virtually to eliminate diphtheria as a disease of great public health significance. It is a reproach to the intelligence of our community that this has not occurred in our own State.

The possibility of using Infant Health Centres as immunisation centres is being explored but any measure which is adopted by the Department depends on the co-operation of the public.

Pressure continues to be exerted on the State Government to legislate to provide for compulsory immunisation against diphtheria. The Department has been reluctant to recommend this as it considers that voluntary effort should be sufficient to achieve the desired result. If, however, the lack of co-operation of the public remains as it is, the attitude of the Department will need to be reviewed.

With regard to poliomyelitis, only 33 cases of the disease were returned in the course of the year, this being the lowest number since 1948,

Towards the end of the year it was announced that the Commonwealth Government was to undertake the manufacture of the Salk Vaccine in Melbourne at the Commonwealth Serum Laboratories and that a quota of this vaccine would be made available to each of the States in the course of 1956.

The Poliomyelitis Committee of the National Health and Medical Research Council met in Melbourne early in November and certain procedures were recommended by it and agreed to by the Council. It is confidently anticipated that, as a result of the experience in the United States of America and in Canada, widespread use of this vaccine will greatly limit the incidence of the disease in our community.

In his report, Dr. Snow outlines the plans which have been made for the campaign in this State. There is no reason to suppose that these plans will not be put into operation smoothly and with effect.

As a result of a recommendation of the National Health and Medical Research Council, a Zoonoses Committee was formed in the course of the year (the zoonoses are those diseases of animals which are communicable to man). This Committee consists of the Chief Veterinary Surgeon (Mr. Toop), the Principal of the Animal Health and Nutrition Laboratory (Dr. Bennetts), the Tuberculosis Physician (Dr. Heyman-son), the Bacteriologist of the Public Health Laboratories (Dr. Kovacs), and the Epidemiologist (Dr. Snow) (Convenor and Recorder).

Discussions were held on bovine tuberculosis and brucellosis, and reference to Dr. Snow's report will indicate the result of these discussions. The important work of this Committee is to continue.

The entomological survey continued in the course of the year and it is anticipated that it will be completed in 1956.

VENEREAL DISEASES.

In his report, Appendix IX, Dr. Mackenzie comments once more on the inadequacy of the notification of venereal diseases. He estimates that, particularly in gonorrhoea, the actual number of cases in the community is greatly in excess of those which are notified. Treatment is obtained from private practitioners in a large number of cases and all of these are not notified to the Public Health Department.

As in earlier years, his opinion is that the professional prostitute is only a minor source of infection.

STAFF PUBLICATIONS.

An abstract of the contributions to the literature in the course of the year by authors associated with the Department has been prepared by the Librarian, Mr. J. F. Woolcott, and is included in Appendix XII.

MATERNAL HEALTH.

In Appendix XXI it will be seen that during the year 14 women died of causes associated with pregnancy and child birth. This is an increase of two over the previous year and represents a rate of 0·84 per thousand live births. This rate is still too high and particularly is this the case when there was only one death from abortion in comparison with five in the previous year. Excluding cases of puerperal infections and abortion, there were 13 deaths from all other complications of pregnancy and the puerperal state in comparison with only seven in the previous year. The rate per thousand live births was 0·78 for 1955 in comparison with 0·44 in 1954 ; 0·50 in 1953 ; and 0·78 in 1952. The reduction of this rate is a matter of prime public health importance, and can only be produced by an improvement in the standard of obstetric care in the State. However, the total number of deaths is low and one should be cautious in making assumptions of their statistical significance. It is hoped that the appointment of a Professor of Obstetrics, who will also be a Consultant to this Department, will result in an improvement in succeeding years.

INFANT HEALTH.

In the report for 1954 it was seen that Dr. Stang, the Senior Medical Officer for Schools and Medical Supervisor for Infant Health, would be retiring in the course of 1955. Her retirement took effect from 18th July, 1955 and the State and the Department lost the services of one to whom Infant Health owes a great debt. The well organised service which now exists is in large measure due to her vision, persistence and professional ability. The organisation of this service in a State where there is a small population scattered over a wide area presents great difficulties. These merely served as a challenge to Dr. Stang who by dint of her personal qualities overcame them most successfully. The low infant mortality rate is a tribute to her work.

After her retirement and until the end of the year, the Deputy Commissioner of Public Health, Dr. Davidson, undertook the supervision of the Infant Health Service and of the School Medical Service. Reports (Appendices XIII and XIV.) are by him.

The infant mortality rate for 1955 was 22·44 per thousand live births. Although this is not the lowest of any State in the Commonwealth, it compares favourably with others which are :

| | | | | | |
|-------------------|------|------|------|--------|--------------------------|
| Victoria | | | | 18·37 | } per 1,000 live births. |
| Queensland | .... | .... | .... | 20·28 | |
| Western Australia | .... | .... | .... | 22·44 | |
| South Australia | .... | .... | .... | 23·20 | |
| Tasmania | .... | .... | .... | 23·37 | |
| New South Wales | .... | .... | .... | 24·86 | |
| (New Zealand | | | | 20·20) | |

An important development in the course of the year was the extension of the activities of the Infant Health service to include the supervision of the health of the pre-school child. In order to ensure that the staff would be properly trained for this new role, a special course of in-service training for Infant Health Nurses was commenced in November—this course to extend over approximately one year. Ten Sisters commenced their training.

It is proposed to repeat this course every year and for other Sisters to undertake it as is convenient.

When this plan is fully in operation, every child will be under the supervision of this Department from birth until school-leaving age.

Sister P. Ashton has been appointed Pre-School Sister and in the latter half of the year had already examined 569 pre-school children.

Attempts have been made to estimate accurately the number of infants attending Infant Health Clinics. It has been found that approximately 70 per cent of all infants born in this State attend a Clinic.

SCHOOL MEDICAL SERVICE.

On the retirement of Dr. Stang in July 1955, the School Medical Service was placed under the control of the Deputy Commissioner of Public Health, Dr. Davidson. His report will be seen in Appendix XIV.

Dr. Davidson outlines in broad terms the principles under which the School Medical Service operates. He shows that owing to the numbers of children and of schools which are to be examined, it is impossible to give a proper school medical service with satisfaction to the Department and the Medical Officers. Instead of 4 School Medical Officers as at present, there should be at least 6, and preferably 7.

The absence of a proper medical examination room at the schools makes the medical examination of the children extremely difficult. There is little privacy, and interference by extraneous noise is most disconcerting both to the examining doctor and the child examined. Every school should have a medical examination room as part of its premises.

The Department is being constantly approached by Local Health Authorities, Parents and Citizens' Associations and other interested bodies with complaints concerning the sanitation of certain schools. In areas where the provision of septic tanks in the community is universal and indeed may be compulsory, it is anomalous that in the local school there should be no septic tank system and a pan service has to be provided. This Department has commenced, through the agency of the newly formed Health Education Council, to educate the public in all matters of sanitation. It is a very poor example if the State schools are not all provided with proper and adequate sanitary facilities where it is possible to install them.

In the course of the year, Dr. Davidson carried out a survey into the heights and weights of over 7,000 school children. An account of this work and his comments thereon are included in Appendix XV. and will repay studying.

As a community, we are rather facile in assuming that the nutrition of our people is all that could be desired. It would perhaps cause some public concern if it were more widely known that the heights and weights of our school children are lower than those in the United States of America.

SCHOOL DENTAL SERVICE.

Reference should be made to the report of Mr. McKenna, the Senior Dental Officer for Schools, in Appendix XVI.

At the end of the year the staff was still under establishment, there being only 12 School Dentists instead of 14.

It has been recommended that the School Dental staff be considerably increased and if the State's finances will permit this and if it is possible to recruit the additional staff, this will be done in 1956. It is obviously impossible that a staff establishment that was fixed in 1949 to cater for the then school population should be able to do so at the present when there has been an increase in that population of about 40 per cent.

In the course of the year the Government approved of the granting of Dental Bursaries and when the holders of these bursaries become graduates it should be possible to augment the professional staff.

NURSING BRANCH.

The Principal Matron, Miss Lee, in her report, Appendix XVIII, says that, as in previous years, routine inspections have been carried out on private and maternity hospitals. These inspections have been made more efficient by the inclusion of one of the Department's Health Inspectors in the inspecting party.

Improvements continue to be made in the quality of the accommodation and the facilities provided at private and maternity hospitals.

St. Helens Hospital, East Fremantle, was purchased by the Government and leased to Sister Bunce.

In the course of the year, two refresher courses were held—one for matrons, organized by The Royal Australian Nursing Federation in co-operation with the Public Health Department ; 30 matrons attended from hospitals both in the country and the metropolitan area. In addition, the State Committee of the College of Nursing Australia conducted a Refresher week in "Theatre Management". This Week was attended by a large number of nurses from all over the State.

The Government continues to grant scholarships for post-graduate diploma courses held at the College of Nursing Australia. Two such to the value of £600 were awarded in the course of the year.

The policy of granting Nursing Bursaries was introduced and 44 awards were made. It is expected that there will be an increased number next year.

In December the new Government School of Nursing was opened in Colin Street, West Perth, having transferred from the Devonleigh Hospital. A large house had been purchased and adapted and new lecture and demonstration rooms etc. constructed at the rear of the premises. The whole unit is most attractive and efficient and it is expected that it will be able to cater for an increased intake of trainees for training in the country hospitals.

Miss Harler, the Organizer of Nursing Training, reports that there is still a shortage of intake of trainees and that the shortage of trained staff in the country hospitals places difficulties in the way of the training of nurses in these hospitals. More responsibility is placed on the staff of the Central Training School as a result.

NURSES' REGISTRATION BOARD.

For report see Appendix XIX.

CONCLUSION.

In conclusion, I wish to place on record my thanks to you, Sir, for your kindly understanding and support of the work of the Department in the past year. In addition, the co-operation of the staff has been all that could be desired.

LINLEY HENZELL, M.D. (London), B.Sc., D.P.H.

Commissioner of Public Health.

Appendix I.

VITAL STATISTICS – WESTERN AUSTRALIA.

| | 1953. | 1954. | 1955. |
|--|---------|---------|---------|
| Mean Population— | | | |
| Males | 320,492 | 330,350 | 339,137 |
| Females | 300,542 | 309,790 | 319,610 |
| Total | 621,034 | 640,140 | 658,747 |
| Births— | | | |
| Males | 8,056 | 8,136 | 8,436 |
| Females | 7,806 | 7,792 | 8,187 |
| Total | 15,862 | 15,928 | 16,623 |
| Birth rate per 1,000 of mean population | 25·54 | 24·88 | 25·23 |
| Deaths— | | | |
| Males | 3,008 | 3,203 | 3,106 |
| Females | 2,064 | 2,161 | 2,273 |
| Total | 5,072 | 5,364 | 5,379 |
| Death rate—rate per 1,000 of mean population | 8·17 | 8·38 | 8·17 |
| Natural increase rate per 1,000 of mean population | 17·37 | 16·50 | 17·06 |
| Infant Mortality per *1,000 births— | | | |
| Metropolitan area | 23·28 | 19·59 | 22·50 |
| Rest of State | 24·36 | 25·38 | 22·37 |
| Whole State | 23·83 | 22·54 | 22·44 |
| Stillbirths— | | | |
| Metropolitan | 135 | 129 | 114 |
| Whole State | 268 | 270 | 239 |

* Excluding Stillbirths.

Comparison of Infant Mortality and General Death Rate.

| Place. | Infant Mortality. | | | General Death Rate. | | |
|---|-------------------|-------|-------|---------------------|-------|-------|
| | 1953. | 1954. | 1955. | 1953. | 1954. | 1955. |
| New Zealand (a) | 20·06 | 19·99 | 20·20 | 8·84 | 8·98 | 8·95 |
| Western Australia | 23·83 | 22·54 | 22·44 | 8·17 | 8·38 | 8·17 |
| New South Wales | 24·65 | 25·30 | 24·86 | 9·36 | 9·46 | 9·32 |
| Victoria | 21·15 | 19·30 | 18·37 | 9·45 | 9·19 | 8·92 |
| Queensland | 24·98 | 22·29 | 20·28 | 8·55 | 8·64 | 8·44 |
| Tasmania | 22·88 | 23·94 | 23·37 | 8·33 | 8·67 | 7·87 |
| South Australia | 20·65 | 21·29 | 23·20 | 8·97 | 9·01 | 9·19 |

(a) Non-Maori.

Appendix II.

PUBLIC HEALTH LABORATORIES.

To the Commissioner of Public Health.

Generally the Public Health Laboratories can be divided regarding their function, into five main types :—

- 1. Diagnostic and clinical.
- 2. Milk and dairy products.
- 3. Water, sewage and industrial wastes.
- 4. Chemical.
- 5. Biological manufacturing.

The duties of the Public Health Laboratories in Western Australia are divided between the first three groups. The laboratories perform general diagnostic bacteriology, the bacteriology of enteric diseases, tuberculosis, milk and dairy products, food, as well as water and sewage bacteriology, besides parasitology, mycology and serology, especially of treponemal infections. An important part of clinical bacteriology occupies the sensitivity testing of all pathogenic or potentially pathogenic bacteria. The chemical analysis of food, milk and dairy products, water, sewage and industrial wastes is the responsibility of the Government Chemical Laboratories. For the time being biological production is only controlled by occasional sterility tests.

This report should give a detailed analysis of the work performed in 1955 in the Public Health Laboratories with special reference to the most important events of the year, for instance the diphtheria epidemic, our experience with the laboratory testing of the different antibiotics, etc.

Progress in the scientific field should be mentioned with its practical application.

Routine Examinations.—The number of examinations done in 1955 in the Public Health Laboratories as compared with those in 1954 is illustrated in Table No. 1.

During 1955, the overall increase in the *Public Health Laboratories* was 16,371 examinations (43·54 per cent.). Of this, work for the Royal Perth Hospital increased by 11,019 (42·8 per cent.) and the examinations for the Department of Public Health showed an increase of 5,352 (45·24 per cent.). The Tuberculosis specimens of the Department of Public Health decreased by 532 (11·17 per cent.) while those of the Royal Perth Hospital increased by 562 specimens (26·53 per cent.) together accounting for an increase of 30 (·43 per cent.). Thus in the main Bacteriological Laboratory the increase was for the Royal Perth Hospital 10,457 (44·26 per cent.) and the Department of Public Health 5,884 (83·24 per cent.) or an overall increase of 16,341 specimens (43·78 per cent.). The total examinations carried out by the *Bacteriological Laboratories* amounted to 53,949 of which the main Laboratory was responsible for 47,037 examinations and the Tuberculosis Laboratory for 6,912.

Table 1.
Statistics of Bacteriology Laboratories.

| | 1954. | | | 1955. | | |
|---|--------|--------|--------|--------|--------|--------|
| | R.P.H. | D.P.H. | Total. | R.P.H. | D.P.H. | Total. |
| Bacteriology without M. tuberculosis and M. leprae | 23,628 | 7,068 | 30,696 | 34,085 | 12,952 | 47,037 |
| M. tuberculosis and M. leprae | 2,131 | 4,751 | 6,882 | 2,680 | 4,232 | 6,912 |
| Bacteriology—Total | 25,759 | 11,819 | 37,578 | 36,765 | 17,184 | 53,949 |

The monthly distribution of the examinations can be seen in Table 2.

Table 2.

| — | Jan. | Feb. | Mch. | Apl. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Total, 1955. | Total, 1954. | Increase or Decrease per cent. |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|-----------------|--------------------------------------|
| <i>General Bacteriology—</i> | | | | | | | | | | | | | | | |
| Royal Perth Hospital | 2,269 | 2,367 | 2,648 | 2,921 | 4,743 | 3,958 | 3,503 | 2,690 | 2,273 | 2,380 | 2,281 | 2,052 | 34,085 | 23,628 | + 10,457 = 44·26 % |
| Public Health Department.... | 675 | 817 | 723 | 722 | 2,661 | 1,916 | 1,074 | 850 | 665 | 874 | 992 | 983 | 12,952 | 7,068 | + 5,884 = 83·24 % |
| <i>M. tuberculosis and M. leprae—</i> | | | | | | | | | | | | | | | |
| Royal Perth Hospital | 176 | 185 | 254 | 143 | 254 | 258 | 187 | 248 | 232 | 233 | 267 | 243 | 2,680 | 2,118 | + 562 = 26·53 % |
| Public Health Department.... | 245 | 399 | 441 | 338 | 412 | 266 | 344 | 372 | 293 | 347 | 410 | 365 | 4,232 | 4,764 | —532 = —11·17 % |
| Number of examinations, Total | 3,365 | 3,768 | 4,066 | 4,124 | 8,070 | 6,398 | 5,108 | 4,160 | 3,463 | 3,834 | 3,950 | 3,643 | 53,949 | 37,578 | + 16,371 = +43·54 % |

The Distribution of the specimens was as follows :—

Table 3.

| Examinations. | R.P.H. | P.H.D. | Total. |
|--|--------|--------|--------|
| <i>Bacteriology—</i> | | | |
| Animal Inoculations (excluding T.B. inoculations) | 119 | 10 | 129 |
| Blood cultures | 233 | 19 | 252 |
| Brucella Cultures | 3 | 21 | 24 |
| Burn swabs | 133 | 1 | 134 |
| C.S.F.—(a) culture | 402 | 34 | 436 |
| (b) micro | 408 | 40 | 448 |
| Dark Ground examination | 5 | .... | 5 |
| Ear and Eye swabs culture | 57 | 33 | 90 |
| Fluids, serous cavities—(a) culture | 80 | 7 | 87 |
| (b) micro | 80 | 7 | 87 |
| Faeces—(a) culture | 390 | 227 | 617 |
| (b) micro | 172 | 37 | 209 |
| Fungi examinations | 26 | 2 | 28 |
| Gonococci—(a) smears | 111 | 975 | 1,086 |
| (b) culture | 5 | 11 | 16 |
| K.L.B., Swabs for | 10,767 | 7,617 | 18,384 |
| Other throat swabs—not K.L.B.—culture | 46 | 104 | 150 |
| Nasal swabs | 63 | 77 | 140 |
| Pus cultures | 998 | 203 | 1,201 |
| Sensitivity tests | 7,743 | 659 | 8,402 |
| Sputa—(a) culture | 649 | 47 | 696 |
| (b) micro | 291 | 24 | 315 |
| Urine—(a) culture | 4,798 | 300 | 5,098 |
| (b) micro | 5,272 | 314 | 5,586 |
| Vaccines | 1 | 30 | 31 |
| Vaginal swabs.—(a) culture | 207 | 50 | 257 |
| (b) micro | 210 | 52 | 262 |
| Wound swabs | 405 | 27 | 432 |
| Miscellaneous | 76 | 10 | 86 |
| M. tuberculosis (including animal inoculations) | 2,673 | 3,931 | 6,604 |
| M. leprae | 7 | 301 | 308 |
| Air and Dust | 2 | .... | 2 |
| Milk .... | .... | 45 | 45 |
| Frozen Foods .... | .... | 36 | 36 |
| Water—(a) drinking .... | .... | 1,333 | 1,333 |
| (b) river, ocean .... | .... | 509 | 509 |
| (c) sewage .... | .... | 3 | 3 |
| Rat Survey .... | .... | 17 | 17 |
| Sterility tests | 313 | 8 | 321 |
| Miscellaneous .... | .... | 3 | 3 |
| Faeces—(a) Amoebae | 5 | 2 | 7 |
| (b) Worms or ova | 13 | 7 | 20 |
| Vaginal smears for Trichomonas | 1 | 2 | 3 |
| Miscellaneous | 1 | 49 | 50 |
| Total | 36,765 | 17,184 | 53,949 |

Sensitivity Testing.

As one of the most important means of the treatment of bacterial infection is chemotherapy, the sensitivity testing of all pathogenic bacteria and potential pathogens against Antibiotics and Sulphonamides was performed as a routine. The Gram positive cocci were tested against Penicillin, Streptomycin, Chloramphenicol, Tetracycline, Oxytetracycline, Chlorotetracycline, Erythromycin, Bacitracin and against Sulphadiazine and Sulphafurazole (Gantrisin). The enterobacteriaceae were tested with the following discs : Streptomycin, Chloramphenicol, the three tetracyclines, Polymyxin B, Sulphadiazine, Gantrisin and further, for experimental reasons, Erythromycin was also used, although for the time being the last mentioned test gave no benefit to the clinician.

Through the rising incidence of resistant bacteria, it will be more and more difficult to use a general scheme of selected antibiotics for the treatment of infections, and especially in Staphylococcal infections, only *sensitivity testing can serve as a guide* in the therapy.

Although the limitations of the *disc method* are well known, for practical purposes this method was chosen for routine use as it was found adequate and satisfactory for clinical use and it gives practically the same results as the other methods. The important issue is to know its limitations and not to use it as a quantitative test. It will, under proper care, tell if a strain is sensitive, moderately sensitive or resistant.

The Laboratories performed 75,618 *individual sensitivity tests* and prepared the discs for them. At the end of the year, Penicillin testing was done in two concentrations using 1 and 10 unit discs.

The following concentrations of the sensitivity discs were used :—

| | | | |
|--------------------|------|------|-----------------------------|
| Penicillin | .... | .... | 1 and 10 units per disc. |
| Streptomycin | .... | .... | 10 ug per disc. |
| Chloramphenicol |  | .... | 25 ug per disc. |
| Tetracycline | .... | .... | 30 ug per disc. |
| Oxytetracycline | .... | .... | 25 ug per disc. |
| Chlorotetracycline |  | .... | 25 ug per disc. |
| Erythromycin | .... | .... | 10 ug per disc. |
| Bacitracin | .... | .... | 5 units per disc. |
| Polymyxin B | .... | .... | 100 units (10 ug) per disc. |

These antibiotic concentrations correspond with the middle range of concentrations recommended by the laboratories which supply the discs to the majority of the diagnostic laboratories in the United States of America, although there is a tendency, especially among some Scandinavian authors, to use discs (or tablets) with higher concentrations of some of the antibiotics. We avoided using these concentrations in routine tests as they might have given a false security to the clinician especially when correspondingly high doses of the antibiotics are not used on the patients.

Extensive work was begun on the sensitivity testing of bacteria cultured from endocarditis, meningitis, osteomyelitis etc. cases, where different methods of sensitivity testing were used. In particular the testing of *antibiotic combinations* should be mentioned, as combined antibiotic therapy among other things may prevent the appearance of resistant strains. The work was still in an experimental stage at the end of the year, so the results of this work will be reported next year.

Staphylococci.

The increasing frequency of penicillin resistant *Staphylococci* has become a serious therapeutic problem and demands a revision of our therapeutic armament. During the introduction of penicillin therapy in 1942 practically all *Staphylococci* strains were sensitive to penicillin, but in 1950 50 per cent. of the strains cultured in *hospitals* were penicillin resistant and in 1952, 64·7 per cent. were resistant in Sydney and 75 per cent. in Boston. Besides the ever increasing development of penicillin resistance of the *Staphylococci* there is a tendency for an increasing frequency of resistance to other antibiotics.

The results of antibiotic sensitivity of the *Staphylococci* isolated by the Public Health Laboratory during the year 1955 is shown below. There were 1,386 strains isolated from Royal Perth Hospital specimens and 210 strains from patients mainly from private practitioners.

Percentage of sensitive strains.

| Antibiotic and Chemotherapeutics. | Royal Perth Hospital. | Public Health Material. | Royal Perth Hospital, 1954. |
|-----------------------------------|-----------------------|-------------------------|-----------------------------|
| | 1,386 strains. | 210 strains. | |
| | % | % | % |
| Penicillin | 16·8 | 29·0 | 21·0 |
| Streptomycin | 46·7 | 87·2 | 85·0 |
| Chlorotetracycline | 71·9 | 93·8 | 91·0 |
| Oxytetracycline | 62·3 | 94·8 | 89·0 |
| Tetracycline | 59·6 | 89·5 | 89·0 |
| Chloramphenicol | 97·9 | 99·0 | 95·0 |
| Erythromycin | 98·1 | 100·0 | 100·0 |
| Bacitracin | 95·2 | 98·1 | 98·0 |
| Sulpha-diazine | 23·2 | 31·4 | |
| Gantrisin | 26·0 | 34·8 | |

As already mentioned there is a tendency in different authors to use higher concentrations of penicillin in sensitivity testing, therefore by the end of the year 230 strains from the Royal Perth Hospital were examined for their sensitivity using both 1 unit and 10 unit penicillin discs. The distribution of the strains sensitive to 10 units were as follows :—

| | |
|--|----------------|
| Sensitive to 1 unit | 21·3 per cent. |
| Sensitive to 1 and 10 units | 27·8 per cent. |
| Resistant to 1 but sensitive to 10 units | 6·5 per cent. |
| Resistant to both | 72·2 per cent. |

From the above statistics it will be seen :—

1. That the Royal Perth Hospital Staphylococci are uniformly less sensitive to antibiotics than the strains cultured from the material of private practitioners.
2. That the large majority of strains from both sources are resistant to penicillin.
3. That the introduction of a “ 10 unit test ” only slightly affects the finding of penicillin-resistant Staphylococci.

Although the percentage of penicillin-sensitive cases dropped further from 21 per cent. in 1954 to 16·8 per cent. in 1955, the most striking differences are the increased resistance of the Staphylococci against :

1. The tetracyclines : As against an average of 90 per cent. sensitive to the three tetracyclines in 1954, 64·6 only were sensitive in 1955. Chlorotetracycline was more effective than oxytetracycline and tetracycline. This result is in accordance with the findings of Welch *et al.* According to these authors the three tetracyclines do not possess equal antibacterial activity.
2. Streptomycin : As against an average 85 per cent. sensitive in 1954 46·7 per cent. were sensitive in 1955.
3. Chloramphenicol : The high sensitivity rate could be explained by the present restricted use of this antibiotic.

On the occurrence of Staphylococcus aureus in the *general population* of Perth a survey of staphylococcus carriers was performed in collaboration with Dr. A. Johnson, Acting Deputy Director, Commonwealth Department of Health.

From 199 nasal swabs Staphylococcus aureus was cultured in 37 specimens= 19·6 per cent.

From these strains, sensitive to penicillin (1 unit disc) were 14 = 38·0 per cent.

Practically all the strains were sensitive to streptomycin, the three tetracyclines, chloramphenicol, erythromycin and bacitracin.

All this material is too small to draw definite conclusions, the collection of nasal swabs on a larger scale is in progress.

Diagnosis and Sensitivity of Ps. pyocyanea.

Twenty per cent. of our Ps. pyocyanea strains did not produce pyocyanin on nutrient agar and 8 per cent. were negative on Loeffler medium. The diagnosis of these strains previously caused difficulties, as many of the strains were biochemically inactive. It was found that in *Hiss medium* all the strains produced acid from glucose in 24 hours in contrast to glucose peptone water where the majority of the strains utilised glucose only in 48 hours and several strains required a longer incubation time. All strains haemolysed horse

and human blood, but horse blood proved the superior. A further feature of the species found in our laboratories is the inability of *Ps. pyocyanea* to grow in 6·5 per cent. *NaCl* broth when a light inoculum is used. All our strains were, as is known, citrate positive in 24 hours, saccharose and Indol negative. These criteria, with the quick *oxidase* test which we introduced two years ago, and which serves as a screening test, are sufficient to diagnose a Gram negative strain as *Ps. pyocyanea*.

The sensitivity of 305 strains of *Ps. pyocyanea* was as follows :—

| | | | | |
|--------------------|------|------|------|----------------|
| Streptomycin | .... | .... | .... | 11·5 per cent. |
| Chlorotetracycline | .... | .... | .... | 40·7 per cent. |
| Oxytetracycline | .... | .... | .... | 87·0 per cent. |
| Tetracycline | .... | .... | .... | 16·0 per cent. |
| Chloramphenicol | .... | .... | .... | 18·0 per cent. |
| Polymyxin B | .... | .... | .... | 97·0 per cent. |
| Erythromycin | .... | .... | .... | 8·2 per cent. |
| <hr/> | | | | |
| Sulphadiazine | .... | .... | .... | 31·0 per cent. |
| Gantrisin | .... | .... | .... | 15·4 per cent. |

Polymyxin B and *oxytetracycline* are known to be the most effective antibiotics for *Ps. pyocyanea*. In our material, chlorotetracycline and chloramphenicol follow in third and fourth places respectively. Only 16 per cent of the strains were sensitive to tetracycline and 11·5 per cent. to streptomycin and the relative resistance of our strains to these two antibiotics should be stressed.

Proteus Strains.

The sensitivity of 647 *Proteus* strains cultured from Royal Perth Hospital specimens is compiled as follows :—

| Chemotherapeutica. No. of strains = | | | | | P. vulgaris. 18 | P. mirabilis. 474 | P. morgani. 35 | P. rettgeri. 120 |
|--|------|------|------|------|--------------------|----------------------|-------------------|---------------------|
| | | | | | % | % | % | % |
| Streptomycin | .... | .... | .... | .... | 27·8 | 56·5 | 60·0 | 0·83 |
| Chlorotetracycline | .... | .... | .... | .... | 66·6 | 15·9 | 54·7 | 9·16 |
| Oxytetracycline | .... | .... | .... | .... | 77·8 | 14·1 | 48·5 | 7·5 |
| Tetracycline | .... | .... | .... | .... | 61·2 | 7·8 | 51·0 | 4·17 |
| Chloramphenicol | .... | .... | .... | .... | 89·0 | 92·9 | 88·5 | 43·4 |
| Polymyxin B | .... | .... | .... | .... | 11·1 | 9·7 | 2·86 | 0·83 |
| Erythromycin | .... | .... | .... | .... | 0·0 | 3·38 | 2·86 | 2·5 |
| | | | | | <hr/> | | | |
| Sulphadiazine | .... | .... | .... | .... | 61·2 | 77·0 | 60·0 | 10·0 |
| Gantrisin | .... | .... | .... | .... | 61·2 | 73·5 | 57·2 | 10·0 |

From the *Proteus* types the high resistance of *Proteus rettgeri* strains against the different chemotherapeutics should be stressed.

Further to this we found several strains of *Proteus rettgeri* which were resistant to all antibiotics. Yet most of these strains proved to be sensitive to *Furadantin*. Systematic examination of the *Furadantin* sensitivity and combination of the chemotherapeutics are in progress.

Streptococci.

As the Ward & Rudd media did not always prove reliable in the differentiation of Group A streptococci from other groups of streptococci, the differentiation of these strains is performed on a blood agar plate without Carbohydrate and on a glucose-blood-agar plate, prepared with 0·3 per cent. Lab-Lemco, 1 per cent. Proteose No. 3 Peptone (Difco), 1 per cent. Glucose, 0·5 per cent. NaCl, 1·5 per cent. Agar, pH : 7 : 4, to which 10 per cent. citrated human blood is added. This medium is poured over a saline agar base. We found that it was essential that the glucose and agar medium should not be sterilised together, as heat sterilised glucose-agar did not give regular results. Therefore, the glucose should be sterilised separately either by Seitz filtration or by heat sterilization and the sterile solution added to the sterile Lab-Lemco agar.

In contrast to blood agar without glucose, haemolysis of the Group A Streptococci is inhibited on the above medium and the Enterococci will produce a grey-brown change in the medium, as we reported previously (Z. f. Immunitaetsforschung, 1926, V. 49, p. 450).

For the differentiation of *Diplococcus pneumoniae*, among others, the *Optochin disc* which was introduced by Bowers & Jeffries, proved to be useful and was used as a routine.

Salmonella & Shigella.

There was an increase in the occurrence of *Salmonella* and *Shigella* infections in our material.

From 36 patients 46 positive *faeces* cultures were obtained. From nine *Salmonella* specimens the following types* were cultured :—

| | | | | | | |
|-----------------|------|------|------|------|------|-------------|
| S. typhi | .... | .... | .... | .... | .... | 4 specimens |
| S. paratyphi A | .... | .... | .... | .... | .... | 1 „ |
| S. typhi murium | .... | .... | .... | .... | .... | 2 „ |
| S. anatum | .... | .... | .... | .... | .... | 1 „ |
| S. budapest | .... | .... | .... | .... | .... | 1 „ |

In eight blood cultures *Salmonella* bacteria were found. (See below under blood cultures.)

Further, in 37 *faeces* specimens *Shigella* bacteria were found. The distribution of the *Shigella* types was as follows :—

| | | | | | | |
|--------------|------|------|------|------|------|--------------|
| Sh. sonnei | .... | .... | .... | .... | .... | 37 specimens |
| Sh. flexneri | .... | .... | .... | .... | .... | 8 „ |
| Sh. shiga | .... | .... | .... | .... | .... | 2 „ |

For the examination of intestinal pathogens the following media were used :—Direct plating on S. S. (Difco) and McConkey Agar and enrichment in selenite broth with subculture after 18 and 48 hours on further sets of the above solid media.

In each case of gastroenteritis *phenylethylalcohol-blood plates* were further utilised mainly for the culture of staphylococci.

The above methods were also used for the culture of pathogens from frozen *egg pulp*. The bacterial control of egg pulp was routinely introduced at the end of the year as the export of frozen egg pulp is an important asset to Western Australia. Forty-one batches of egg pulp were controlled during 1955.

Twenty-seven *Moore swabs* were examined in the laboratories during 1955. No *Salmonella* or *Shigella* was isolated.

Besides the foregoing the laboratory carries out the bacterial examination of *milk* and was helpful with technical advice to the milk industry.

Blood Cultures.

There was an increase in the number of positive *blood cultures*, which can be partly explained by the improved technique introduced in 1954. A bottle with double medium and a Liquoid tube for the preparation of blood agar plates were used. The double medium is composed of Trypticase-soy broth (B.B.L.) and the same base with 2·3 per cent. Davis agar to which 10 per cent. ox serum and 0·5 per cent. of 1 per cent. solution of tetrazoliumhydrochloride are added in the solid phase. We modified the medium this year by adding 0·03 *per cent of Liquoid* (Roche) to the broth to prevent clot formation and at the same time neutralise the bactericidal property of the blood. The incorporation of tetrazoliumhydrochloride into the agar—which we introduced last year—facilitates recognition of the growth in a very early stage.

During the transfer of the blood into the blood culture bottle we do not use disinfectants to sterilise the perforated screw cap which closed the bottle, as previous experience has shown that iodine disinfectant can be introduced into the bottle or that the medium can be contaminated, as happened when *Ps. pyocyanea* was inadvertently introduced with the needle into the medium by the staff when using Zephiran as a disinfectant. (For skin disinfection iodine in alcohol is used.) The surface of the screw cap is kept sterile by fitting a thin *tin foil cover* over the cap with a *tin foil strip* hanging down on both sides, so that the cover can be lifted easily by these strips and the blood injected through the sterile rubber membrane of the perforated screw cap into the culture bottle.

Great importance was given to the taking of *several blood cultures* in each case and, as a routine, at least five blood cultures were done in one or two day periods.

* For the serological differentiation of the *Salmonella* strains we are indebted to Miss Nancy Atkinson, Head of the *Salmonella* Reference Laboratories, Adelaide.

The following bacteria species were cultured from the blood :—

| | No. of Specimens. | No. of Cases. |
|-----------------------------|-------------------|---------------|
| Br. abortus | 3 | 1 |
| S. typhi | 4 | 2 |
| S. paratyphi A | 3 | 1 |
| S. cholera suis | 1 | 1 |
| B. coli | 1 | 1 |
| Ps. pyocyanea | 1 | 1 |
| Staphylococcus aureus | 15 | 5 |
| Streptococcus viridans | 5 | 1 |
| Streptococcus faecalis | 3 | 1 |
| Pneumococcus | 1 | 1 |

It will be noticed from the above that Staphylococcus aureus was found in a high percentage of bacteriaemias.

Syringe Service.

The Public Health Laboratories introduced a *Syringe Service* for *blood cultures* for private practitioners and this organisation proved most useful.

The details of this service can be seen in the notice which appeared in the Bulletin of the British Medical Association :—

“ As Doctors in private practice seldom have facilities available for reliable sterilisation necessary in bacteriological work, syringe and needles are available, packed individually and are obtained at the Public Health Laboratories, 4th Floor, Royal Perth Hospital, from 8·30 a.m. to 5 p.m. Monday to Friday, or from the Clerk, Casualty Department, Royal Perth Hospital, from 5 p.m. to 8·30 p.m. on those days or during week-ends and public holidays.

No charge is made provided equipment is returned in good condition, but blood culture examination is chargeable at statutory rates. It should be understood that the syringe service is only provided for blood culture done at the Public Health Laboratories.”

Cerebro Spinal Fluid.

From the 436 *cerebro spinal* fluids 11 gave a positive culture. The distribution of these cultures was as follows :—

| | |
|-----------------------------|---|
| N. meningitidis | 1 |
| Diplococcus pneumoniae | 3 |
| Staphylococcus aureus | 1 |
| Ps. pyocyanea | 1 |
| B. coli | 1 |
| Torula histolytica | 4 |

The number of cultures performed in the laboratories do not reflect the actual occurrence of acute bacterial meningitis in our material as the majority of the C.S.F. requests ask for culture as a “ routine.” There were, however, a few cases where the cellular reaction conformed with a bacterial meningitis, and where the negative culture result can only be explained by the long time taken in the transport of the specimen under unfavourable conditions or, in a few cases, the contamination of the specimen.

Diphtheria.

The serious *diphtheria epidemic* which started in January continued to the end of the year though it showed a decrease in incidence during the last months. This epidemic brought with it several problems and demanded an emergency reorganisation of the laboratory. (*Vide* Table 4.)

The bacteriological examination of *diphtheria cases* and diphtheria suspects was done from the throat and nose of the patients. Two swabs were taken from the *throat* ; one of these swabs was used for the inoculation of a Loeffler medium by the nursing staff at the bedside, and the second was sent to the laboratory where a Loeffler slope, a tellurite-blood plate and a blood agar plate were inoculated. The same procedure was used from the swabs taken from one of the *nostrils*. This meant that for each case four separate Loeffler serum slopes two tellurite and two blood agar plates were used, The blood agar plate served to show

the incidence of haemolytic streptococci and staphylococci. At the same time we gained further experience in the growth of *C. diphtheriae* on blood agar plates, which is quite typical. In several cases an almost pure culture of *C. diphtheriae* was grown on these plates and the Albert stain gave a typical microscopical morphology in contrast to the bacteria grown on tellurite media, where the morphology of the diphtheria bacterium is changed by the addition of tellurite and often a subculture (on Loeffler medium) was necessary to confirm the diagnosis.

A difficult task was the examination of the large number of swabs from *contacts*. From these cases, only a limited number could be swabbed from the throat and nose and in the majority only a throat swab was received. Often 250 or more swabs were examined daily and this imposed a heavy burden on our staff as only some of them had sufficient experience in diphtheria diagnosis. It should also be mentioned that the very limited laboratory space made the work extremely difficult. Mainly, for this reason, a throat swab only was examined from the majority of the contacts and this was inoculated on to a Loeffler slope and tellurite plate.

From the different tellurite media we found that a modification of the Schroer medium gave the best results. The preparation of this medium was easier than many of the other selective media for diphtheria diagnosis. This should be mentioned as the big demand for media caused a very heavy burden on the present small media room. Details of our experience and preparation of the medium will be published.

On conclusion of the diphtheria epidemic it can be said that the *tellurite* medium used by us was much superior to the Loeffler medium and we noted that 83 per cent. of the positives were found on tellurite medium and only 48 per cent. on Loeffler medium.

In spite of the superiority of the tellurite-blood medium the simplicity of the preparation of the Loeffler medium should be stressed as well as the fact that it can be easily stored. For this reason it still keeps its place in diphtheria diagnosis in many laboratories.

At the end of the year experimental work started with *fluid enrichment media* mainly for diphtheria carriers, and especially for the control of post diphtheria carriers before their release from the hospital. At present it is too early to draw a conclusive opinion on our results.

The importance of the laboratory during a diphtheria epidemic is firstly, to confirm the clinical diagnosis, especially at a time of epidemic where a tendency exists to suspect in each tonsillitis a diphtheria case, and secondly, to find all the carriers and to prevent the spread of the infection. To control the parallel issue between clinical and laboratory diagnosis, close contact was kept with the Infectious Diseases Hospital from where, besides the case history, weekly reports of the diagnosis were received. In each case where the specimen was sent by a practitioner in private practice and the diphtheria diagnosis could not be confirmed by the laboratories, the following letter was sent with the bacteriological report :

“ *Re : Throat Swab—Patient X.*

I shall be grateful if you will let me know whether any treatment (antitoxin, antibiotic or a sulpha drug) had been given before the swab was taken. At the same time would you kindly advise me of your final diagnosis in this case.”

The survey of all these cases showed that close results were achieved between the clinic and the laboratory, and in all cases where no *C. diphtheriae* was found the patients had either tonsillitis or, in a few diphtheria cases, they had had penicillin treatment before the swab was taken. The statistical analysis of the diphtheria work can be seen from Tables 4 and 5.

It should also be mentioned that during the examination of contacts we found 54 “ *carriers* ” who developed diphtheria in one to seven days after the swabs were taken (incubatory carriers).

All the diphtheria strains examined, mainly from the cases which remained carriers after antitoxin and penicillin treatment, were sensitive to penicillin and erythromycin.

It should be stated that, although the strains were penicillin sensitive *in vitro*, several cases had to be treated with erythromycin as they remained diphtheria carriers after repeated courses of penicillin administration.

The conversion of diphtheria cases to bacteriologically negatives during and after treatment is shown in Table 6.

The diphtheria strains cultured from postdiphtheric carriers remained *virulent* during the course of examinations, several strains continuing so for longer than the four weeks' observation period.

1,528 throat swabs were taken from cases where diphtheria could not be excluded but which subsequently proved to be *negative* for diphtheria.

| | | | | | | |
|---|------|------|------|------|------|-----------|
| Pathogens were isolated from | .... | .... | .... | .... | .... | 608 cases |
| These were : Streptococcus haemolyticus | .... | .... | .... | .... | .... | 459 |
| Staphylococcus aureus haem | .... | .... | .... | .... | .... | 124 |
| No pathogens were isolated from | .... | .... | .... | .... | .... | 920 cases |

Table 4.

Diphtheria—General Statistics.

| | Number. | Positive. | Positives. | | |
|---|---------|-------------|------------------------|------------------------|------------------------|
| | | | Loef. +ve Tell. —ve | Loef. —ve Tell. +ve | Loef. +ve Tell. +ve |
| 1. Specimens | 18,384 | 820 (5·5%) | | | |
| 2. Specimens cultured on Loeffler and Tellurite media | 12,902 | 684 (5·3%) | 114 (17%) | 356 (52%) | 214 (31%) |
| 3. Specimens cultured on <i>one</i> medium | 5,482 | | | | |
| a. Specimens cultured on <i>Loeffler</i> only | 5,414 | 129 (2·4%) | | | |
| b. Specimens cultured on <i>Tellurite</i> only | 68 | 7 (10·3%) | | | |
| 4. Virulence Tests (intracutaneous) | 271 | 220 (82·0%) | | | |

Table 5.

Distribution of the positive findings according to the origin of the swabs was as follows :—

| | | | | |
|--|------|------|-----|-------|
| Number of positives, both throat and nasal swabs taken | .... | .... | 300 | |
| <i>Diphtheria cases :</i> | .... | .... | 250 | |
| Positive throat only | .... | .... | 170 | 68·0% |
| Positive nose only | .... | .... | 37 | 14·8% |
| Positive throat and nose | .... | .... | 43 | 17·2% |
| <i>Diphtheria carriers :</i> | .... | .... | 50 | |
| Positive throat only | .... | .... | 27 | 54·0% |
| Positive nose only | .... | .... | 18 | 36·0% |
| Positive throat and nose | .... | .... | 5 | 10·0% |

The first specimens of 237 diphtheria cases were examined for other pathogens than *C. diphtheriae*.

In 52 cases *Staphylococcus aureus* was present and in 57 cases *Streptococcus haemolyticus*.

Table 6.

Seventy-two bacteriologically proved cases became bacteriologically *negative* after the stated number of days shown below after antitoxin and penicillin treatment.

| Number of Days. | Number of Cases.* | Percentage. |
|-----------------|-------------------|-------------|
| 1 | 8 | 11 |
| 2 | 24 | 33 |
| 3 | 8 | 11 |
| 4 | 4 | 6 |
| 5 | 4 | 6 |
| >5 | 24 | 33 |
| Total | 72 | 100 |

* These numbers are for the maximum number of days that could have elapsed before becoming bacteriologically negative. In some cases which were not swabbed daily, the actual time which elapsed may have been less.

Tuberculosis Laboratory.

The most important innovation in the work of this laboratory was the introduction of the *Blood Agar medium*. Although as far back as 1912, blood medium was successfully used by Sick in the culture of *M. tuberculosis*, only in 1949 *Bastin*, and in 1951 *Richter* and, especially *Tarshis*, drew attention to the great practical use of this medium. After extensive experimental work we established that an agar medium based on the Dubos medium with the addition of 20 *per cent. citrated human blood* gave excellent results. We have found this medium superior to the blood medium with a simple agar water base recommended by *Tarshis*.

As our statistics show, the blood medium gave 28 *per cent. higher yield* of *M. tuberculosis* than the generally used Loewenstein-Jensen medium and from 107 positive specimens 20 would have been lost without the use of the blood medium. See table 7.

Table 7.

Positive Culture of Myco-Bacterium Tuberculosis.

Results obtained from 1,029 Cultures from 1st July, 1955, to 31st December, 1955.

| No. of Positive Specimens. | Loewenstein. | | Blood Media. | | Positive Specimens on both Loewenstein and Blood Media. | Specimens positive on Loewenstein only. | | Specimens positive on Blood Media only. | | | | |
|----------------------------------|------------------------|--------------------|------------------------|--------------------|---|--|-----------|--|-----------|-----------|-----------|-----------|
| | Positive Specimens. | Positive Tubes. | Positive Specimens. | Positive Tubes. | | | | | | | | |
| 107 | No. 71 | % 66.4 | No. 107 | No. 91 | % 85.0 | No. 135 | No. 55 | % 51.4 | No. 16 | % 14.9 | No. 36 | % 33.6 |

The further advantage of the blood medium is that the *typical colonial morphology* can be seen at an earlier stage than on the Loewenstein-Jensen medium. It seems also that the non-chromogenic acid fast saprophytes can be easily differentiated on this medium, which is not always the case on the Loewenstein-Jensen medium.

It should be mentioned that we had less *contaminated* tubes with the blood medium (using 50 units penicillin /ml) than with the Loewenstein medium.

To differentiate the acid fast saprophytes the *Besredka medium* was introduced. The use of this medium is recommended by Jensen and we found it a most useful means not only in the differentiation of the *Mycobacteria*, but also as a useful fluid medium besides the Kirschner medium for the culture of tuberculosis specimens. It may also be mentioned that the *neutral red* biochemical virulence test was used as a routine.

The virulence of tubercle bacilli resistant to isoniazid and some other drugs may become attenuated, although the decrease of virulence for guinea pig did not necessarily result in the attenuation of the virulence for humans. Therefore the guinea-pig virulence test is (a) not an absolutely reliable test for the differentiation of mycobacteria, (b) not necessarily indicative of a strain's virulence for humans. Through the occurrence of attenuated strains the guinea-pig virulence test lost a lot of its value. The cellular morphology, colonial morphology, biochemical tests, cord formation, slow growth rate, the absence of pigment and the absence of growth at room temperature gained importance in the diagnosis of *M. tuberculosis*. Special attention was given to all saprophytes to differentiate them from the attenuated *M. tuberculosis*. The mere so, as chromogenic or "atypical" mycobacteria have been found in human diseases resembling tuberculosis. These strains have very little or no virulence for guinea-pig but it is very probable that under certain circumstances they can be virulent for man. We investigated two chromogenic strains which were obtained repeatedly from human sources. (See Tables 8 and 9).

Our attention was drawn by the Chest Clinic to the probability that a few *false positive* reports were issued by the Tuberculosis laboratory. This possibility caused grave concern and demanded serious investigation. Unfortunately, it was too difficult to analyse the individual reports as in many cases it was impossible to recheck the results. The most vigorous control methods were introduced in the handling, processing, culture and animal inoculation of the specimens. A big handicap in the reorganisation of the laboratory was the dangerously limited working space. Some of the methods were revised and a new type of inoculation pipette, double sterile hoods for the NaOH and HCl treatment, sterile decanting rods, etc., were introduced. Special attention was paid to avoid spattering of infectious material during work with the platinum loop. To avoid clerical errors all records and labels were stamped concurrently with "numerators." In the end we came to the conclusion that the possible false reports could only be attributed to individual technical mistakes and therefore a thorough reorganisation of the staff is under way.

Table 8.
Comparison of the results of guinea-pig inoculation and culture.

| — | | | | | | | Number of Examina- tions. | Positive Guinea-pigs. | | Positive Cultures. | |
|------------------------|------|------|------|------|------|------|---------------------------------|-----------------------|------|--------------------|------|
| | | | | | | | | No. | % | No. | % |
| Miscellaneous .... | .... | .... | .... | .... | .... | .... | 211 | 15 | 7.1 | 9 | 4.2 |
| Gastric Contents ..... | .... | .... | .... | .... | .... | .... | 675 | 161 | 23.9 | 142 | 21.0 |
| Total ..... | .... | .... | .... | .... | .... | .... | 886 | 176 | 19.9 | 151 | 18.2 |

Number of animals used for M. tuberculosis work = 741 guinea-pigs.
6 rabbits.
3 chickens.

The general analysis of the positive cultures and the occurrence of saprophytes appear in Table 9.

Table 9.

| Specimen. | No. of Cultures. | No. of Posi- tives. | A. F. Saprophytes. | | | | Guinea-pig +ve Culture | Guinea-pig +ve Culture | Guinea-pig +ve Culture |
|-----------------------------|---------------------|---------------------------|--------------------|------|------|---|---------------------------|---------------------------|---------------------------|
| | | | % | No. | % | Percentage compared with +ve Cults of M. tuberculosis. | +ve | —ve | —ve |
| Urine | 376 | 24 | 6.4 | 3 | 0.8 | 12.5 | .... | .... | .... |
| C.S.F. | 82 | 8 | 9.5 | .... | .... | .... | .... | .... | .... |
| Sputum | 767 | 132 | 17.2 | 12 | 1.6 | 9.1 | .... | .... | .... |
| Miscellaneous | 127 | 9 | 7.1 | .... | .... | .... | .... | .... | .... |
| Gastric Con- tents | 675 | 178 | 26.4 | 17 | 2.5 | 12.0 | 125 (70.2%) | 36 (20.2%) | 17 (9.6%) |

Media Room.

In 1955 the media room prepared 3,213.5 litres of media. Outside hospital laboratories were supplied with :—

6,144 tubes of media
and 139.5 litres of media in bottles.

This means an increase against 1,954 of :—383.8 per cent. of the tubed media and 144.7 per cent. of the bottled media.

Serology Section.

Syphilis and Yaws.—In the north of Western Australia a number of the aboriginal population is affected by treponemal infections and an important Public Health problem is to determine if this disease is mainly yaws and whether cases of syphilis are a product of an occasional contact with civilisation or if the syphilitic infection is also widely distributed.

The results of the survey were as follows :—

Serological Tests for Treponemal Infections in Natives from the North of Western Australia.

| Town and District of Origins. | | | | | Number of cases examined. | Positives | Total. |
|-------------------------------|------|------|------|------|---------------------------------|-----------|--------|
| | | | | | | No. | % |
| Port Hedland | .... | .... | .... | .... | 316 | 194 | 61.3 |
| Roebourne | .... | .... | .... | .... | 41 | 6 | 14.6 |
| Mount Magnet | .... | .... | .... | .... | 19 | 12 | 63.1 |
| Derby | .... | .... | .... | .... | 12 | 7 | 58.3 |
| Total | .... | .... | .... | .... | 388 | 219 | 56.4 |

| | | | | | | | | | |
|---|------|------|------|------|------|------|------|-----|------|
| | | | | | | | | | % |
| Number of cases examined | .... | .... | .... | .... | .... | .... | .... | 388 | .... |
| Wassermann reaction and flocculation tests both negative | .... | .... | .... | .... | .... | .... | .... | 169 | 43·6 |
| Number of positives, as under | .... | .... | .... | .... | .... | .... | .... | 219 | 56·4 |
| Wassermann reaction and flocculation tests both positive | .... | .... | .... | .... | .... | .... | .... | 156 | 71·2 |
| Wassermann reaction negative, flocculation tests positive | .... | .... | .... | .... | .... | .... | .... | 55 | 25·1 |
| Wassermann reaction positive, flocculation tests negative | .... | .... | .... | .... | .... | .... | .... | 8 | 3·7 |

All treponemal infections produce positive serological reactions with the different complement fixations and flocculation tests. It seems that the serological reaction turns positive more slowly in yaws than in syphilis. A further complication in the laboratory diagnosis arises from the occurrence of leprosy in the native population and the biologically false positive tests—which could be present in approximately 60 per cent. of the cases—connected with it.

In addition to all these difficulties it appears that even the Nelson treponema pallidum immobilisation test (TPI) can not be used for differentiation between treponema pallidum and treponema partenue infections.

Biologically False Positive Serological Tests in Pregnancy.

In the previous year in our material about 6 per cent. of the sera of pregnant women gave a positive serological test for syphilis. As the prevention of congenital syphilis is one of the most important aims of syphilis control, it was the responsibility of the Public Health Laboratories to evaluate the specific nature of these reactions and to help the clinician in his decision whether an immediate treatment should be initiated. The penicillin treatment which is the method of choice, is relatively simple, therefore there was a possibility that cases would be treated on the grounds of the positive serological report only.

As it is known that in pregnancy there is an increase in the incidence of biologically false positive tests, we assumed that, with a few exceptions, our positive pregnancy tests were biologically false positive as on the one hand the majority of the cases gave a positive result with the complement fixation tests only, but they were negative with the flocculation tests (Kahn and Cardiolipin : V.D.R.L.). On the other hand, however, on repeated examination most of the sera became negative. A further proof of the correctness of our assumption was found when the positive reactions were practically eliminated by changing the antigen used for the Wassermann reaction. Since we introduced the Improved Kolmer antigen (Difco) the percentage of the positives dropped from 6 per cent. to 0·6 per cent., most probably due to higher specificity of the Difco antigen than that prepared in our laboratory.

Each new case of positive treponemal test was repeated and as a rule the following request was sent to the practitioner.

- “ Please inform us of any sign and history of a specific infection and send further specimen of a blood to repeat the test.
- “ Attached copy of this report to be returned to Laboratory with new specimen. The original report should be retained.”

In co-operation with the doctors several cases of biologically false positive reaction were saved, not only from the stigma of a syphilitic infection, but from unnecessary treatment which once started may prevent the verification of a false positive reaction and necessitate the completion of the treatment. As all serological tests for Treponemal infections are without charge in Western Australia there is no reason not to repeat the tests before initiating treatment, especially when there is no clinical evidence of the disease.

Normal Agglutinin Values in Western Australia. With the increasing number of Salmonella infections it was essential that normal agglutinin titres of the population of Western Australia should be determined. Dr. LeBreton, the Director of the Red Cross Blood Transfusion Service, kindly supplied us with 312 blood samples.

Of these 37 were not tested because of unsuitability (insufficient quantity or haemolysis).

137 of the cases examined were not stated to have had TAB inoculations, nor enteric fever.

114 of these showed no agglutination with Salmonella antigen at titre of 1 : 25.

The remaining 23 sera gave “ standard ” agglutinations as follows :—

| | 1/25 | 1/50 | 1/100 | 1/200 | 1/400 | 1/800 | Total. |
|--------------------|------|------|-------|-------|-------|-------|--------|
| S. typhi “ H ” | 8 | 9 | 4 | 2 | .... | .... | 23 |
| S. typhi “ O ” | .... | .... | .... | .... | .... | .... | .... |
| S. paratyphi “ A ” | 8 | 6 | .... | .... | .... | .... | 14 |
| S. paratyphi “ B ” | 6 | 7 | 4 | 3 | 1 | .... | 21 |

Fourteen of the 23 sera agglutinated all three antigens to same degree ; Eight agglutinated two antigens.

Parallel with tests for Salmonella agglutinins, 275 sera were tested with *Brucella abortus* antigen. 17 sera agglutinated to a titre of 1 : 25 after 48 hours' incubation and 5 to a titre of 1 : 50. No higher titres were detected. No history of Brucella infection was given.

On the work of the Serological Laboratory *Mr. A. F. Drummond*, Technical Officer, gives the following account :—

Table 10.

| | R.P.H. | P.H.D. | Total. |
|---------------------------------------|--------|--------|--------|
| <i>Serology—</i> | | | |
| Wassermann reactions | 1,236 | 4,709 | 5,945 |
| Kahn tests | 1,178 | 4,156 | 5,334 |
| Cardiolipin tests (V.D.R.L.) | 1,206 | 3,743 | 4,949 |
| Gonococoeal complement fixation tests | 182 | 1,010 | 1,192 |
| Hydatid eomplement fixation tests | 12 | 13 | 25 |
| Widal reactions | 273 | 1,564 | 1,837 |
| Weil-Felix reactions | 91 | 402 | 493 |
| Abortus agglutinations | 98 | 693 | 791 |
| Antiglobulin test for Brucella | 17 | 92 | 109 |
| Rickettsial agglutination and C.F.T. | 1 | 3 | 4 |
| Anti-Streptolysin O titre estimation | 11 | 18 | 29 |
| Cold agglutinins | 9 | 14 | 23 |
| Paul Bunnell tests | 49 | 166 | 215 |
| Heparin Protamin titrations | .... | 3 | 3 |
| Rose & Ball tests | 266 | 46 | 312 |
| Miscellaneous inc. Coombs test | .... | 74 | 74 |
| <i>Medico Legal Examinations—</i> | | | |
| Chemical tests for blood | .... | 31 | 31 |
| Serologieal tests for blood | .... | 38 | 38 |
| Semen examination—a. chemical | .... | 18 | 18 |
| b. micro | .... | 25 | 25 |
| Lectures | 18 | 15 | 33 |
| <i>Hormone Tests—</i> | | | |
| Toad tests (qualitative) | 141 | 815 | 956 |
| Toad tests (quantitative) | 1 | 11 | 12 |
| Friedman tests | .... | 22 | 22 |
| Aschheim-Zondek test (qualitative) | .... | 3 | 3 |
| Aschheim-Zondek test (quantitative) | 1 | 1 | 2 |
| Total | 4,790 | 17,685 | 22,475 |

Wassermann Reactions.—For some years, this laboratory has prepared its own Kolmer Antigen. It became apparent that the number of reactive non-treponcmatic sera was excessive, and from June 1955 on the advice of the Bacteriologist Difco Kolmer Improved Antigen was substituted.

For the first five months of 1955, the number of sera showing positive Wassermann reactions, but negative flocculation tests (Kahn and Cardiolipin) was 5.97 per cent. of all sera tested. With the new antigen, the perecentage dropped to 0.61 per cent. of all sera tested (June to December inclusive).

Hydatid Complement Fixation Tests.—The relatively small numbers of these tests done (25 in 1955) is a minor task, but some concern has been felt at their almost consistently negative results. Control sera from known proved cases of hydatid disease are not always available. An investigation of histories of Royal Perth Hospital cases from whom bloods were submitted (12 during 1955), revealed that ten were finally diagnosed as some disease other than echinococcosis, and the remaining two were undiagnosed. None therefore, was finally diagnosed as hydatid disease.

Only one case of hydatid disease was notified to the Public Health Department during 1955. This was a notification from a eountry medical practitioner. No blood specimen was received from this case.

Rose and Ball Differential Sheep Cell Tests.—312 of these agglutinations were requested. Although this test is still regarded as being in the investigational stages, *titres of over 32* were generally present in eases of elinical rheumatoid arthritis.

Lectures to Nurses.—It proved advantageous to compress the series of demonstrations given to each school of trainee nurses, (Royal Perth Hospital and Medical Department) to 3, rather than 5 as previously, without omitting any of the substance of the lecture-demonstrations. The advantages are a compact, integrated series, and economy of travelling time to and from lectures.

Accommodation.—In November 1955, the Serology Section occupied new quarters in the south west wing. Re-equipped, the unit is now self-contained except for clerical facilities.

MISCELLANEA.

Medico Legal Examinations.

As in previous years the bacteriologist performed the medico-legal examinations. The number is shown in the statistical portion of the Serological Section.

Reference Service.

A *Reference Service* was introduced to assist a group of clinicians who are in close contact with the laboratories in problems connected with clinical bacteriology, mainly on publications dealing with the collection of bacteriological specimens and the evaluation of the bacteriological reports especially antibiotic treatment, etc. Primarily, the purpose we had in mind was the communication to the clinicians the contents of important papers appearing in journals which present mainly laboratory subjects, and which journals are not generally seen by them.

New Premises.

The building of the new media room on the 9th floor of the south wing of the Royal Perth Hospital is almost finished and will be one of the most modern in Australia. It comprises a 31 ft. x 21 ft. media preparation room, boiler room, two sterile filling rooms, plugging and sterilising room, wash-up room, a large refrigerated room and two storerooms.

Appointment of Senior Technicians.

The work of the laboratories was badly handicapped by the lack of senior technicians. There was a disparity in the quality of the work done in the laboratories as well as in the age and experience of the staff, as no member of the staff in the Bacteriological Laboratories had more than two years' experience and the average age was not more than 22 years. Therefore, it was of great importance that, on the advice of the Commissioner of Public Health, the Public Service Commissioner advertised in Australia and England five posts for experienced technicians.

Release of Bacteriologist from Haematology Department of Royal Perth Hospital.

An important development was that in June 1955 the bacteriologist was relieved of the responsibilities of the *Haematology Department* of the Royal Perth Hospital and was able to concentrate at last on the problems of Public Health bacteriology and serology and on clinical bacteriology of the Royal Perth Hospital.

Toxoplasmosis.

Prof. Ida Mann arranged with the Toxoplasmosis Laboratory in San Francisco for investigation of sera from patients suspected to be suffering from Toxoplasmosis. For this examination the following requirements are necessary :—

- (1) 8–10 c.c. of blood should be withdrawn under sterile conditions and sent to the Public Health Laboratory in suitable sterile containers which will be provided on request by the Laboratory. If required, the Public Health Laboratory will also supply sterile syringes and needles to facilitate the collection of blood.
- (2) A summary of the patient's clinical history, together with the results of any investigations already undertaken should accompany the specimen.

No charge will be levied for the investigation.

Public Health Department's Survey for Eye Infections.

Fifteen eye swabs and 75 slides were examined for this survey. No inclusion bodies were found and one Koch-Weeks infection was diagnosed.

Department of Public Health, King Edward Memorial Hospital Laboratories.

The Laboratory in the King Edward Memorial Hospital was under the control of the Public Health Laboratories until the end of June, 1955, when it was placed under the direction of that hospital. For this period Mr. G. C. Vos, Senior Technician, sent in the following report :—

Routine Activities.

- (a) Serology.
- (b) Haematology.
- (c) Preparation and Standardisation of Anti-Rh serum.
- (d) Maintenance of Blood Bank.
- (e) Research in immuno-haematology.
- (f) Bacteriology.

This laboratory, during the above period, continued its activities as in the past to assist not only King Edward Memorial Hospital requirements, but also private practitioners, particularly in the country, with matters concerning blood group incompatibilities during pregnancies.

As a result of this service, the laboratory now has the individual records of thousands of patients on hand, for statistical and technical analysis.

G. A. Kelsall and G. H. Vos published an article on “The Foetal and Neonatal Wastage Due to Sensitization by the Rh Factor,” in the Medical Journal of Australia, February 19, 1955.

Serology.

The total number of tests carried out during this period was 17,640 and represents :—blood grouping, Rh tests, Rh antibody estimations, Coomb’s titrations and routine Kahn tests.

Haematology.

Routine haematological tests for this period were 2,677 and comprised the majority of ante-natal and post-natal tests requested from this hospital.

Bacteriology.

The work in this section represented 1,504 bacteriological tests requested by the Hospital Medical Staff.

In collaboration with Dr. A. G. Mathew the laboratory carried out many varied investigations in connection with staphylococcal infections.

Report from January-June, 1955.

| Type of Examination. | January. | February. | March. | April. | May. | June. | Total. |
|---|----------|-----------|--------|--------|-------|-------|--------|
| A.B.O. Grouping and Rh typing | 853 | 808 | 939 | 710 | 896 | 777 | 4,983 |
| Serology | 2,861 | 2,848 | 3,344 | 2,567 | 3,179 | 2,841 | 17,640 |
| Haematology | 388 | 618 | 458 | 356 | 416 | 441 | 2,677 |
| Bacteriology | 216 | 294 | 226 | 204 | 275 | 289 | 1,504 |

Acknowledgments.

In the administration of the laboratories the technical officer, Mr. A. F. Drummond, assisted most efficiently and his efforts should be especially recorded here. His technical skill and experience in staff matters greatly facilitated my work.

Last, but not least, I have to thank the staff of the Public Health Laboratories for their help and for the interest they took in the routine work and in the solving of scientific problems of the laboratories. The effort of the staff should be particularly mentioned in connection with the diphtheria epidemic, through-out which they often worked till late at night.

I wish to take this opportunity to express my sincerest thanks to you, sir, for your interest in our work and for the support and encouragement you have given me at all times.

NICHOLAS KOVACS, M.D. (Vienna), M.R.C.P.A.,
Bacteriologist.

Appendix III.

REPORT FROM THE DIRECTOR, TUBERCULOSIS CONTROL BRANCH
TO THE COMMISSIONER OF PUBLIC HEALTH

I have the honour to submit a report on activities for the year ended 31st December, 1955.

The report is submitted in the form first adopted in 1950, but there is increased elaboration of records :—

- (1) Records and Statistics.
- (2) Prevention.
- (3) Case Finding.
- (4) Medical Care and Isolation.
- (5) Social and Economic Protection of Sufferers.
- (6) After-Care and Rehabilitation.
- (7) Developments.
- (8) Conclusion.

(1) RECORDS AND STATISTICS.

STATISTICAL TABLE.

| Year. | Mean Popu- lation 1,000s. | Notifications. | | | Number on Register. | | | Prevalence per 100,000. | | Number Receiv- ing T.B. Allow- ance. | Deaths. | | | Death Rate per 100,000. | |
|-------|------------------------------------|----------------|---------------|--------|---------------------|---------------|--------|----------------------------|---------------|--|---------|---------------|--------|----------------------------|---------------|
| | | Pulm. | Non- Pulm. | Total. | Pulm. | Non- Pulm. | Total. | Pulm. | All Forms. | | Pulm. | Non- Pulm. | Total. | Pulm. | All Forms. |
| 1950 | 558 | 586 | 18 | 604 | 2,100 | .... | .... | 376 | .... | 515 | 125 | 3 | 128 | 22·4 | 22·9 |
| 1951 | 580 | 467 | 37 | 504 | 2,402 | 75 | 2,477 | 413 | 426 | 474 | 76 | 6 | 82 | 13·1 | 14·1 |
| 1952 | 601 | 508 | 49 | 557 | 2,574 | 94 | 2,668 | 428 | 444 | 396 | 75 | 7 | 82 | 12·5 | 13·6 |
| 1953 | 621 | 378 | 34 | 412 | 2,762 | 120 | 2,882 | 445 | 464 | 361 | 43 | 3 | 46 | 6·9 | 7·4 |
| 1954 | 640 | 348 | 34 | 382 | 2,769 | 97 | 2,866 | 432 | 447 | 326 | 57 | 4 | 61 | 8·9 | 9·5 |
| 1955 | 659 | 413 | 39 | 452 | 2,965 | 128 | 3,093 | 450 | 469 | 330 | 31 | 2 | 33 | 4·7 | 5·0 |

The annual mortality rate for tuberculosis in all forms has dropped to 5 per 100,000 of the population ; and that for pulmonary tuberculosis alone to 4·7.

There were 452 notifications of tuberculosis during the year, of whom 413 were pulmonary and 39 non-pulmonary. This increase of notifications of pulmonary tuberculosis was again due to the increased case finding activities, this being the first completed year of non-stop compulsory surveys in the metropolitan area.

Of the 413 pulmonary notifications 273 were male and 140 female. The maximum incidence in males was in the 50–55 age group with the main spread over the 35–65 year period ; but 39 over the age of 64 years were notified. In females the maximum incidence was in the 30–35 age group with the main spread over the 20–45 year period ; but there were 47 notified over the age of 44 years (*see* Graph).

The number of patients on the Tuberculosis Case Register has risen slightly to 3,093, of whom 2,965 are pulmonary and 128 non-pulmonary.

This gives the prevalence of the disease of 469 per 100,000 of the population for tuberculosis of all forms, and 450 for pulmonary tuberculosis—the highest on record, which can be interpreted simply as being due to the fact that tuberculosis is not now a major killing disease and patients are kept alive and well.

Of the 3,093 registered cases 521 are noted as new arrivals since 1948, of whom 171 are British born and 350 foreign.

The supervision of the register as at 31st December, 1955, is as follows :—

| | | | | | | | |
|--|------|------|------|------|------|------|-------|
| Perth and Fremantle Chest Clinics | .... | .... | .... | .... | .... | .... | 1,573 |
| Repatriation Commission (includes 70 In-patients) | .... | .... | .... | .... | .... | .... | 750 |
| Kalgoorlie Chest Clinic | .... | .... | .... | .... | .... | .... | 159 |
| Private Practitioners (including country T.B. Officers) | .... | .... | .... | .... | .... | .... | 193 |
| Wooroloo Sanatorium | .... | .... | .... | .... | .... | .... | 216 |
| Claremont Mental ; Royal Perth Hospital ; Undercliffe and other Hospital | .... | .... | .... | .... | .... | .... | 202 |
| Total | .... | .... | .... | .... | .... | .... | 3,093 |

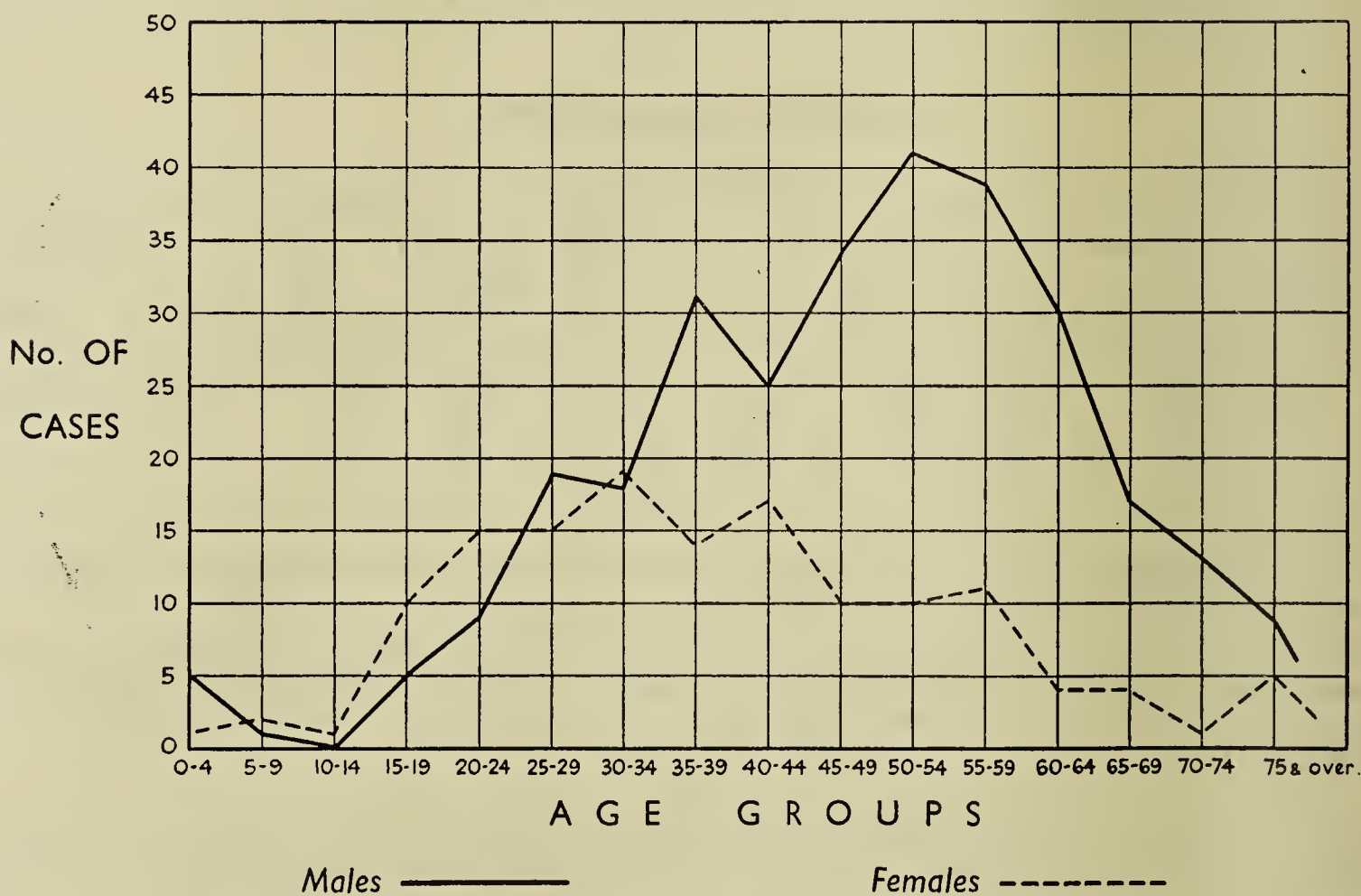
A total of 245 cases were removed from the Register during the year, of which number 113 were discharged as cured with further supervision unnecessary ; 42 transferred out of the State ; a revised diagnosis was made in 15 instances ; and there were 70 deaths, *i.e.*, including those due to tuberculosis and other causes, and 5 were untraceable.

Of the 2,849 pulmonary cases in which the disease was classified as at 31st December, 1955, 569 were considered active ; 1,233 were considered as “ arrested ” ; and 1,047 had progressed to the “ inactive ” stage.

A total of 138,433 35 mm. micro films were taken during the year, of which 108,929 were taken in the metropolitan area, and the balance in country centres. The total number of micro film exposures since commencement of operations in May, 1948, is now close to the half-million, being in fact more than 455,800. A total of 12,040 large films were taken, bringing the total for the same period to 82,720.

At the end of the year there were 330 individuals in receipt of the Tuberculosis Allowance—approximately the same number as at the corresponding time the previous year.

GRAPH SHOWING AGE DISTRIBUTION OF PULMONARY T.B. NOTIFIED IN 1955.



(2) PREVENTION.

The Senior Visiting Nurse reports supervision of 1,836 patients in the metropolitan area—an increase of over 200 on the previous year’s figures. Further progress is noted here, however, in the state of health of the patients, as fewer visits were necessary—these totalling 5,025 compared with 6,691 the previous year. The reason for this is obvious when it is shown that in this group there are only now 29 out-patients with positive sputum—that is, carrying a serious risk of infection to other persons.

The Visiting Nurse at Kalgoorlie reports keeping an eye on 159 patients during the year, of whom five had positive sputum.

There has been a further relaxation of controlled follow-up x-ray examination of contacts of known cases of tuberculosis, and only 966 persons were registered as reporting in this category. This has been due to overlapping with compulsory mass surveys, when contacts do not report as such ; and staff deficiencies preventing full functioning of the Contact Register with distribution of contact circulars.

The State Housing Commission was able to provide 25 houses during the year for patients discharged as controlled cases, in those instances where previous living conditions were unsatisfactory or where good living conditions were essential to prevent relapse of disease. Liaison with the Commission’s Welfare Officer is effected by the Tuberculosis Physician.

B.C.G. Vaccination.

A broadening of the scope of B.C.G. vaccination was not thought necessary due to the now apparent low level of infectivity in the community ; and vaccination was restricted to negative reactors amongst National Service Trainees, contacts of known cases, nurses, and girls of the school leaving age group. A total of 7,000 in these groups were tested and 2,600 were vaccinated.

“Morrison” Preventorium.

The demand for admission of babies and infants of mothers suffering from active disease, or who had recently been treated, remains fairly constant. There were 42 admissions during 1955 compared to 45 the previous year.

Action under Sections 293 and 294 of the Health Act.

A total of 41 persons were required “to submit to x-ray examination of the chest for tuberculosis.” These included persons who did not report for examination following discovery of abnormality in micro films during mass surveys ; and patients who had neglected clinic attendances.

The value of this action is revealed by the fact that as a result two patients entered hospital voluntarily for treatment, and out-patient observation was arranged or continued for the remainder.

Two persons were fined £2 with £3 5s. costs in the Perth Police Court on 24th February, 1955, for failure to attend for compulsory mass x-ray examination. Prosecutions were launched against five others but these were withdrawn, as the persons reported prior to the cases being heard.

Three persons suffering from tuberculosis in a communicable state, not conducting themselves to preclude infection to other persons, were “directed to enter Wooroloo Sanatorium for treatment,” and subsequently did so.

(3) CASE FINDING.*(i) Mass Radiography.*

During the year the compulsory mass x-ray effort continued in the metropolitan area covering Maylands, Inglewood, Mount Lawley, Scarborough, North Beach, Osborne Park, Mosman Park, Peppermint Grove, Claremont, Cottesloe, Nedlands, Subiaco ; the City of Fremantle and its suburbs, North and East Fremantle ; and the Survey of the City of Perth itself was commenced towards the end of the year.

From the 108,929 persons over the age of 16 years examined, as mentioned in the report of the Tuberculosis Physician, 124 individuals were discovered suffering from significant pulmonary tuberculosis—slightly over one per thousand examined. This finding is consistent with that of the previous year.

Increased technical personnel were trained during the year to enable the re-commencement of country surveys in November concomitant with those of the metropolitan area ; and 6,422 persons were examined in the towns of York, Cunderdin, Kellerberrin and Merredin ; and as a result 11 persons were admitted to hospital suffering from pulmonary tuberculosis ; 10 of whom were considered proven active cases and one a marked case of primary tuberculosis ; an incidence of two per thousand.

A sample costing covering the expenses for these country surveys was made, and this showed the cost as £86 for the discovery of each active case admitted to hospital (exclusive only of Medical Officers' salaries).

Allowance must be made, however, for the fact that an unduly high prevalence was discovered in one of these centres ; six active cases being found in York, a town where 1,399 adults were examined.

*(ii) Patients Referred by Medical Practitioners.**(a) Metropolitan Area.*

The total number referred—4,127—is a thousand less than for the previous year, this possibly being due to the fact that medical practitioners are becoming more selective in choosing patients for referral and are probably allowing for other methods of case finding such as compulsory mass chest x-ray surveys.

Only 2,213 patients with definite chest symptoms received large film examination, but the fact that 30 were discovered to be suffering from pulmonary tuberculosis—that is, 13 per thousand—proves that this group is still a very important one in case finding.

A total of 1,914 were examined on micro film—such as routine pre-marital, ante-natal, etc.—resulting in five sufferers being notified ; an incidence of approximately 2·5 per thousand.

(b) *Country Areas.*

A further marked increase in the number of films being referred from country hospitals was noted—6,318 films having been received, being 867 more than for the previous year. Special “carbaced” forms were developed during the year for this work to enable the prompt return of reports to country doctors.

The importance of encouraging this work is shown by the fact that 25 sufferers from pulmonary tuberculosis were discovered, a further 71 being observed as suspects; 23 sufferers from pulmonary carcinoma were diagnosed; and 549 other chest abnormalities were reported on in this group. The incidence of four cases of pulmonary tuberculosis per thousand is again a reflection of the varied nature of this group—*i.e.*, from sick patients with chest symptoms to mere routine examinations.

The part-time Tuberculosis Officers at Albany, Bunbury, Collie, Geraldton, Northam, Merredin and Kalgoorlie: namely, Dr. A. E. Vivian, Dr. W. Lawson Smith, Dr. A. Walsh, Dr. A. J. Beaumont, Dr. A. McL. Robinson, Dr. W. J. Grey and Dr. Allan B. Webster respectively, still contribute the greater part of this work; but films were received from 58 country centres* in all. (* *see* below).

In addition, a Clinic Medical Officer makes regular visits to Northam.

(iii) *Hospital In-Patient and Out-Patient Group.*

Only 4,230 35 mm. micro films were taken during the year of In and Out-Patients at the Royal Perth Hospital, as mentioned in the report of the Tuberculosis Physician. These films were read in conjunction with Dr. Rowland Anderson the Medical Superintendent and five patients were subsequently admitted to the Wooroloo Sanatorium.

At the Fremantle Hospital only 606 micro films were taken due to the transfer of the x-ray department of the hospital to new quarters; nevertheless, a large number of 17 in. x 14 in. film examinations were made of suspect in-patients, and Dr. John Rowe, the Medical Superintendent, reports as a result there were 10 notifications of pulmonary tuberculosis during the year.

A total of 3,116 micro films of In-Patients at St. John of God Hospital, Subiaco, were examined by Clinic staff with the finding of four cases of pulmonary tuberculosis, of whom two were transferred to Wooroloo and one to the Repatriation General Hospital, Hollywood, for treatment.

The finding with the routine ante-natal chest x-ray examinations at the King Edward Memorial (Maternity) Hospital, where 2,188 films were examined by Dr. Gordon Donnan, the Consultant Radiologist of the Branch, was most satisfactory as only two sufferers were discovered, one of whom was admitted to Wooroloo and one to the Repatriation General Hospital, Hollywood.

A total of 914 micro x-ray films were taken at the Northam District Hospital.

The incidence of active pulmonary tuberculosis in the “hospital population” group is strikingly low compared with that of a few years ago, and not much greater now than found in the general population—a striking piece of evidence as to progress—but the findings show the work must go on as part of the general control programme.

(iv) *Migrants.*

Although it is impossible still to make a complete check of new arrivals in the State, the majority are now covered in some way or another; and it would appear now that there is no undue prevalence of pulmonary tuberculosis in this group. This is due to the valuable health checks carried out by the Commonwealth Immigration authorities abroad. From figures supplied by this Department it appears there were 18,345 new arrivals to the State, comprising 9,033 British full fare paying passengers (this includes Australians returning to Western Australia); 2,572 Assisted British migrants; and 6,740 Aliens.

A total of 6,751 large films were submitted by the Commonwealth Health Department for re-reading. The majority of the films were of reasonable technical quality, although a small number were unsatisfactory. The value of this re-examination of films was again shown, as six cases of pulmonary tuberculosis were discovered (one Indonesian, one Yugoslav, one Greek, one Indian, one Hungarian and one Finnish). As a result three individuals were admitted to the Wooroloo Sanatorium for treatment; and the other three were observed or treated as out-patients.

A total of 1,533 individuals reported for chest x-ray examination within one month of their arrival, as a result of receipt of pamphlets on arrival, as a result one of these individuals (from Scotland) was admitted to hospital. Considering the increased number of migrants during the year, the number reporting as a result of pamphlets issued is a little disappointing and means many individuals are not observing their responsibilities under the Health Act.

* Albany, Beverley, Boyup Brook, Bridgetown, Broome, Bruce Rock, Bunbury, Busselton, Carnarvon, Collie, Corrigin, Cunderdin, Denmark, Derby, Donnybrook, Dwellingup, Esperance, Geraldton, Gnowangerup, Goomalling, Harvey, Kalgoorlie, Katanning, Kellerberrin, Kondinin, Lake Grace, Leonora, Manjimup, Margaret River, Meekatharra, Merredin, Moora, Morawa, Mount Barker, Mount Magnet, Mullewa, Nannup, Naremburn, Narrogin, Norseman, Northam, Northampton, Onslow, Pemberton, Pinjarra, Pingelly, Port Hedland, Quairading, Roebourne, Southern Cross, Three Springs, Wagin, Wittenoom Gorge, Wickepin, Wyalkatchem, Wyndham, Yarloop and York.

In all there were 61 notifications during the year from migrants who arrived since 1948. Ten of these were British full fare paying passengers ; nine assisted British migrants ; one British seaman ; and three Aliens. Three of the latter were previously known to have disease and had been observed as out-patients.

The decrease of relapse of old disease, as shown by this last figure, rather suggests that the follow-up of this group who arrived mainly in 1947, 1948 and 1949, has now fulfilled most of its usefulness.

There were also a further nine notifications of persons who are not regarded by the Commonwealth Department of Health as true migrants (*e.g.*, a person resident in Australia for 20 years, left Australia for five years, then returned ; or born in Australia of alien parents, taken overseas for several years, then discovered with tuberculosis on return).

In relation to the total notifications of 452, the number of 61 notified during the year would not seem to represent an undue incidence in this section of the community.

4. MEDICAL CARE AND ISOLATION.

For the third year in succession one might say there have been no new developments of note in medical or surgical treatment but rather a refinement of present techniques.

As mentioned in the attached report of Dr. Elphick, the Superintendent of the Wooroloo Sanatorium, we now consider the combination of Streptomycin and Isoniazid as being perhaps the most effective, but there is very little difference between this pair and the combinations of Streptomycin and Para-amino-Salicylic Acid or Para-amino-Salicylic Acid and Isoniazid. As both the latter can be taken orally, this is of course very advantageous in the treatment of out-patients. The rapid conversion of the infectious patient within a few months has, of course, minimised the spread of the disease.

In regard to surgical procedures, although we find the one-stage modified thoracoplasty with leucite plombage, in which the hollow leucite spheres have again replaced Ivalon sponge, is still a most effective operation for the control of apical disease.

The increasing use of resection and segmental resection (the latter of which under drug control allows of removal of relatively small portions of diseased lung) now accounts for the majority of surgical operations.

Artificial pneumothorax has been completely abandoned in this State and pneumoperitoneum is now also used in only a few instances.

It is pleasing to note some improvement in the relapse rate of disease ; and a further critical analysis of this was made during the year by Dr. Elphick. It was considered 44 out of 228 admissions—approximately 15 per cent.—were due to true relapse of disease and, as previously, the contributory causes were considered to be the original extent of disease present on admission, and socio-economic factors.

The analytical approach to this problem has also underlined the fact that sufferers from silico-tuberculosis are more liable to relapse, and after a shorter interval of time.

Undercliffe Convalescent Home.

The 12 beds at Undercliffe continued to provide a useful adjunct to Wooroloo, and 34 females and 24 males were admitted during the year from the Sanatorium, mainly for a few months convalescence before final discharge.

Royal Perth Hospital.

At the beginning of the year there were three male and six female medical beds available, and nine beds for surgical patients.

There were 17 tuberculosis patients in the hospital at 1st January, 1955 and 13 at 31st December, 1955.

There were 145 admissions during the year, including 59 for surgery, including 50 from the Wooroloo Sanatorium.

There were 26 discharges home ; 99 transfers to Wooroloo ; seven transfers to the Repatriation General Hospital, Hollywood ; four transfers to Undercliffe ; five transfers to the King Edward Memorial Hospital ; and four deaths.

Repatriation General Hospital, Hollywood.

The number of beds available for civilian female patients remained constant at 17 ; and 26 patients were admitted during the year, the vast majority for surgical procedures,

Fremantle Hospital.

The small 3-bed Ward continued to be available during the year mainly for investigation, and convalescent patients from the Sanatorium, and was used continuously. Although there was no allotment of male beds, some patients were admitted from time to time.

There were 27 admissions of tuberculosis patients during the year ; seven transfers to Wooroloo ; two transfers to the Repatriation General Hospital, Hollywood ; and 18 discharges to home.

Princess Margaret Hospital for Children.

The number of admissions during the year was again small.

Significant pulmonary tuberculosis in children is very rare in this State, and those admitted are usually discovered following routine Mantoux testing of contacts of adult cases.

There were five children admitted with primary tuberculosis showing X-Ray evidence of the lesion.

Three under the age of two years without apparent lung lesion, but with positive Mantoux test, were admitted for a prophylactic course of Streptomycin and Isoniazid.

There were seven admissions for non-pulmonary tuberculosis including three of cervical adenitis ; three of bone and joint tuberculosis ; and one with tuberculosis meningitis. There were no deaths.

Claremont Mental Hospital.

One of the Medical Officers of the Perth Chest Clinic visits the Tuberculosis Block in this hospital regularly to supervise the treatment of the tuberculous aspect of the patients' condition ; and the excellent results obtained have shown the great benefit of providing this modern Ward for such patients.

At the end of the year the Block was almost fully occupied with 50 male and 24 female patients.

Out-Patient Clinics.

As shown in the report of the Tuberculosis Physician, Dr. Heymanson, the out-patient attendances at the Perth Chest Clinic shows only a very slight increase ; however, with the opening of the new additions to the Clinic in September of the year, an appointment and " wet film " system was instituted, which means that every patient now attending clinic is seen with a film taken that morning, so that, apart from providing a better service with an immediate result for the patient, it saves duplication of visits. Thus there has been a true increase of the actual patients seen.

The Fremantle Chest Clinic has also shown a slight build-up of attendances.

At both clinics there has been a marked reduction in the number of patients attending for artificial pneumothorax refills, for as old cases are abandoned there are now no new cases to take their place, and the clinics are held merely for the continuation of treatment of those individuals in whom this treatment has already been established. There has been a similar reduction in the numbers attending for pneumoperitoneum refills.

The amount of bacteriological investigation has again been increased, this being mainly due to investigation of new cases discovered by compulsory mass radiography surveys.

The following figures show the tests referred to the Public Health Laboratories from the Perth Chest Clinic.

| | No. of Tests. | Individuals. |
|--|---------------|--------------|
| Sputum Examinations | 1,359 | 376 |
| Positive Results for M. tuberculosis | 143 | 49 |
| Gastric Contents (cultures and guinea pigs) | 756 | 168 |
| Positive Results (cultures, guinea pig and virulence) | 241 | 51 |

In spite of the added work, the number of positive findings has decreased, which again is a result of the fact that the majority of cases discovered are only of minimal or moderately advanced disease which is an indication of the lowering of the level of infectivity in the community.

These figures exclude any investigation work from the Fremantle Chest Clinic, which is referred to the Fremantle Hospital laboratory.

As before, some special tests have been referred direct to the Sanatorium laboratory,

(5) SOCIAL AND ECONOMIC PROTECTION OF SUFFERERS.

The Tuberculosis Allowance rate was raised 10s. per week on 27th October, 1955 to £9 12s. 6d. per week for the married sufferer with dependent wife, plus 10s. for each dependent child ; £4 per week for the single sufferer in hospital ; and £6 2s. 6d. per week for the single sufferer undergoing domiciliary treatment. There was no liberalisation of the permissible other income. This remained the same at £7 per week for married male patients and £4 per week for single persons.

In the case of married female patients, the ceiling point of the husband's earnings while the patient is in hospital was raised from £14 to £15 per week ; and while receiving domiciliary treatment, from £18 to £19 per week.

The increases again show that the Commonwealth Government is not prepared to allow any inflationary trend to jeopardise the success of the Tuberculosis Allowance which, after all, is the key stone to the success of the nation-wide drive towards the eradication of tuberculosis.

The 330 patients receiving the Tuberculosis Allowance as at 31st December, 1955, were classified as follows :—

| | | |
|------------------|------|-----|
| Australians .... | .... | 274 |
| Migrants .... | .... | 56 |

The latter comprising English 17, Displaced Persons 15, Italian 13, Greek 5, Dutch 3, Anglo-Indian 1, and Indonesian 2.

(6) AFTER-CARE AND REHABILITATION.

The scope of rehabilitation procedures for tuberculosis patients and ex-patients has remained unaltered.

The preliminary work at the Sanatorium carried out by the Education and Training Officer of the Commonwealth Department of Social Services, in collaboration with Medical Officers there, is carried on when they are discharged by the Senior Medical Officer of the Department of Social Services, Dr. W. F. Tomlinson and the Tuberculosis Physician working in conjunction.

In all some 70 patients were handled one way or another during the year, including interviews with employers, Union Secretaries, as well as arranging actual training courses ; and 28 were actually placed in employment after training.

Apart from this, considerable help was also given by the Officer in Charge of the Physically Handicapped Persons Office of the Commonwealth Employment Service for a number of patients not handled completely, for one reason or another, within the scope of the direct rehabilitation programme.

The activities of the voluntary organisation, the Tuberculosis Association of Western Australia, continue along the same lines with their two factories for placing of ex-patients ; namely, Linley Valley at the village settlement adjacent to the Sanatorium ; and the Cardboard Box Factory in Perth. An interesting development at the latter factory has been the acceptance of some " controlled chronics," who, although working one to two hours per day, achieve some degree of permanency at the factory. This is a different form of " rehabilitation " compared to the temporary employee who, with gradually increasing hours of employment is " hardened up " and graduates to his original or some new form of full-time employment.

The State must be grateful to this Association for its scope of rehabilitation activities.

(7) DEVELOPMENTS.

The Clinic portion of the extensions of the Perth Chest Clinic were officially opened on 6th October by the Hon. Mr. E. Nulsen, Minister for Health. This has enabled the complete separation of the Mass Radiography and Out-Patient Sections of the Clinic, and allows of a more pleasant and I believe efficient service both to the general public attending for compulsory X-Ray examination, and patients attending clinic.

The laboratory section of the extensions still requires considerable work to be done and it is doubtful if it will be equipped and ready to function before the middle of 1956.

The contract for the erection of the new 216-bed Perth Chest Hospital was signed on 1st February, and work on the site commenced shortly afterwards. By the end of the year the foundations of the Hospital and Nurses Home were well above ground.

(8) CONCLUSION.

More intensified case finding procedures have resulted in the disclosure of a higher number of sufferers of pulmonary tuberculosis than in the last two years.

There is an apparent change in the "social pattern" of the disease and relatively more cases are being found in the upper age groups. This is perhaps more apparent than real, due to results of case finding and progress made in earlier years when this was directed at younger age groups.

It is probable in the past that the older age groups have been one of the most dangerous unrecognized reservoirs of infection.

However, in all age groups disease is now being found at an earlier stage.

The results of treatment are now more satisfactory, with prompt conversion of sputum from "positive" to "negative," but the problem of relapse of well established disease has not been completely conquered.

The increase in morbidity must not be taken as an increase of the disease, as it is due solely to increased case finding as a result of compulsory mass surveys and the fact that treatment keeps sufferers alive and well.

There is a marked overall lowering of the level of infectivity in the community.

The death rate for pulmonary tuberculosis has now dropped to an all time low level—namely, 4.7 per 100,000 of the population.

The financial support of the Commonwealth Government is achieving the desired result towards the goal of eradication of tuberculosis in this State.

Progress is such that we must be careful to watch out for any over-optimism or complacency, for I am sure the tubercle bacillus will again teach us a lesson with fresh outbreaks of disease, if we allow of any deviation from the aim of complete eradication.

It is the team work between the medical profession generally, the medical, nursing, clerical and technical staff of the Tuberculosis Control Branch and the Repatriation Commission, that has achieved the encouraging results in our tuberculosis control programme.

In conclusion I would like to express my thanks to all members of the staff of the Branch and of the Head Office who have helped in our work and enabled this report to be presented.

The attached reports of the Tuberculosis Physician and the Medical Superintendent of the Wooroloo Sanatorium show their contributions to the work done.

Again thanking you for your understanding and encouragement.

ALAN KING, B.Sc., M.B.B.S., F.C.C.P.

Director, Tuberculosis Control Branch.

Appendix IV.

REPORT OF THE TUBERCULOSIS PHYSICIAN.

To the Director,

Tuberculosis Control Branch.

Sir, I have the honour to submit a report for the year ended 31st December, 1955.

PERTH CHEST CLINIC.

Out-Patient Clinics.

These were held three times each week.

[illegible]

Artificial Pneumothorax Clinics.

Two Clinics are held each week.

| | | | | |
|--|------|------|------|-----|
| Patients attending for refills as at 31st December, 1955 | .... | .... | .... | 18 |
| Unilateral Artificial Pneumothorax | .... | .... | .... | 11 |
| Pneumoperitoneum | .... | .... | .... | 7 |
| Total Screenings | .... | .... | .... | 719 |
| Total Refills | .... | .... | .... | 704 |

Mass Radiography.

| | | | | | |
|---|------|------|------|------|---------|
| Total Exposures (Perth Metropolitan Area) | | | | | 108,929 |
|---|------|------|------|------|---------|

Perth Chest Clinic (Static Unit).

| | | | | | | | |
|----------------------------|------|------|------|------|------|------|--------|
| Number of 35 mm. exposures | | | | | | | 39,280 |
|----------------------------|------|------|------|------|------|------|--------|

Groups X-rayed include the following :

[illegible]

Total retakes ordered on full-size film were 768, representing 2 per cent. of the total.

Mobile X-ray Units (Perth Metropolitan Area).

[illegible]

Groups X-rayed were as follows :—

| | | |
|---|------|--------|
| National Service Trainees and Australian Regular Army | .... | 2,451 |
| Claremont Mental Hospital | .... | 1,634 |
| Lemnos Hospital | .... | 103 |
| Heathcote Mental Hospital | .... | 161 |
| “Sunset” Old Men’s Home | .... | 424 |
| Swan Portland Cement Works | .... | 322 |
| Teachers’ Training College | .... | 243 |
| Metropolitan Mass Surveys | .... | 64,311 |

Mass Radiograph Findings.

| | | | | | | |
|---|------|------|------|------|------|------|
| Cases of pulmonary tuberculosis notified | .... | .... | .... | .... | .... | 124 |
| Admitted to hospital | .... | .... | .... | .... | .... | 84 |
| Under out-patient observation | .... | .... | .... | .... | .... | 40 |
| Suspect cases under out-patient observation | .... | .... | .... | .... | .... | 116 |
| Incidence of tuberculosis (notified cases) | .... | .... | .... | .... | .... | •11% |
| Non-tuberculosis abnormalities diagnosed | .... | .... | .... | .... | .... | 538 |

Cases referred for X-ray by Private Practitioners.

| | |
|--|-------|
| Number of patients referred (including 1,914 miniature films and 2,213 full-size films) | 4,127 |
| Cases of pulmonary tuberculosis notified | 35 |
| Admitted to hospital | 29 |
| Under out-patient observation | 6 |
| Suspect cases under out-patient observation | 22 |
| Incidence of tuberculosis (notified cases) | • 85% |
| Non-tuberculosis abnormalities diagnosed | 498 |

*Mantoux Tests and B.C.G. Inoculation (Perth Metropolitan Area).**National Service Trainees.*

| | |
|------------------------------|-------|
| Mantoux tests performed | 2,503 |
| Positive reactions | 1,231 |
| Negative reactions | 1,221 |
| B.C.G. inoculations | 1,159 |

Schools.

| | |
|------------------------------|-------|
| Mantoux tests performed | 1,562 |
| Positive reactions | 549 |
| Negative reactions | 966 |
| B.C.G. inoculations | 959 |

Contacts.

| | |
|------------------------------|-------|
| Mantoux tests performed | 1,262 |
| Positive reactions | 324 |
| Negative reactions | 869 |
| B.C.G. inoculations | 289 |

Miscellaneous (Hospital Staffs, etc.).

| | |
|------------------------------|-----|
| Mantoux tests performed | 289 |
| Positive reactions | 161 |
| Negative reactions | 108 |
| B.C.G. inoculations | 61 |

University of W.A.

| | |
|--------------------------------|-------|
| Mantoux tests performed | 410 |
| Positive reactions | 207 |
| Negative reactions | 104 |
| B.C.G. inoculations | 40 |
| <hr/> | |
| Total Mantoux Tests | 6,076 |
| Total B.C.G. Inoculations | 2,508 |

*Miscellaneous Groups X-rayed at Perth Chest Clinic.**Applicants for Entry to the Mining Industry :*

| | |
|--|-----|
| Total number | 420 |
| Cases of pulmonary tuberculosis notified and admitted to hospital | 2 |
| Suspect cases under out-patient observation | 5 |
| Non-tuberculosis conditions diagnosed | 27 |

Applicants for Employment as Hospital Staff :

| | |
|--|-----|
| Total number | 560 |
| Cases of pulmonary tuberculosis notified and admitted to hospital | 3 |
| Suspect cases under out-patient observation | 6 |
| Non-tuberculosis conditions diagnosed | 26 |

Royal Perth Hospital (Routine Chest X-ray of New Patients) :

| | |
|--|----|
| Patients followed up by this Clinic | 42 |
| Cases of pulmonary tuberculosis notified and admitted to hospital | 5 |
| Suspect cases of tuberculosis under out-patient observation | 3 |
| Non-tuberculous conditions diagnosed | 14 |

FREMANTLE CHEST CLINIC.

Out-Patients Clinics.

These were held twice each week.

| | | | | | | | | | |
|---------------------|------|------|------|------|------|------|------|------|-------|
| Total attendances . | .... | .... | .... | .... | .... | .... | .... | .... | 742 |
| Average per Clinic | .... | .... | .... | .... | .... | .... | .... | .... | 8 |
| Full-size x-rays | .... | .... | .... | .... | .... | .... | .... | .... | 2,161 |

Artificial Pneumothorax Clinic.

| | | | | | | | | |
|--|------|------|------|------|------|------|------|-----|
| Patients attending for refills as at 31st December, 1955 | .... | .... | .... | .... | .... | .... | .... | 8 |
| Unilateral pneumothorax | .... | .... | .... | .... | .... | .... | .... | 6 |
| Pneumoperitoneum | .... | .... | .... | .... | .... | .... | .... | 2 |
| Total Screenings | .... | .... | .... | .... | .... | .... | .... | 220 |
| Total Refills | .... | .... | .... | .... | .... | .... | .... | 207 |

Mantoux Testing and B.C.G. Inoculation.

| | | | | | | | | |
|---------------------------|------|------|------|------|------|------|------|-----|
| Mantoux tests performed | | | | | | | | 999 |
| Positive reactions | .... | .... | .... | .... | .... | .... | .... | 284 |
| Negative reactions | .... | .... | .... | .... | .... | .... | .... | 715 |
| B.C.G. inoculations given | .... | .... | .... | .... | .... | .... | .... | 106 |

Cases Referred for X-ray by Private Practitioners.

| | | | | | | | | |
|--|------|------|------|------|------|------|------|-----|
| Patients referred | .... | .... | .... | .... | .... | .... | .... | 581 |
| Cases of pulmonary tuberculosis notified | .... | .... | .... | .... | .... | .... | .... | 7 |
| Admitted to hospital | .... | .... | .... | .... | .... | .... | .... | 6 |
| Under out-patient observation | .... | .... | .... | .... | .... | .... | .... | 1 |
| Incidence of tuberculosis (notified cases) | .... | .... | .... | .... | .... | .... | 1.2% | |
| Non-tuberculous abnormalities diagnosed | .... | .... | .... | .... | .... | .... | .... | 59 |

Mass Radiography.

| | | | | | | | | |
|--|------|------|------|------|------|------|------|--------|
| Number of 35 mm. exposures | .... | .... | .... | .... | .... | .... | .... | 23,085 |
| Groups x-rayed include the following :— | | | | | | | | |
| Volunteers | .... | .... | .... | .... | .... | .... | .... | 21,513 |
| Armed Services | .... | .... | .... | .... | .... | .... | .... | 550 |
| Merchant Navy | .... | .... | .... | .... | .... | .... | .... | 129 |
| Commonwealth and State Public Service Candidates | .... | .... | .... | .... | .... | .... | .... | 20 |
| K.E.M.H. Patients | .... | .... | .... | .... | .... | .... | .... | 94 |
| Contacts | .... | .... | .... | .... | .... | .... | .... | 215 |
| Private Patients (routine) | .... | .... | .... | .... | .... | .... | .... | 410 |
| Miscellaneous | .... | .... | .... | .... | .... | .... | .... | 4 |

Mass Radiography Findings.

| | | | | | | | | |
|--|------|------|------|------|------|------|------|-----|
| Cases of pulmonary tuberculosis notified | .... | .... | .... | .... | .... | .... | .... | 43 |
| Admitted to hospital | .... | .... | .... | .... | .... | .... | .... | 37 |
| Under out-patient observation | .... | .... | .... | .... | .... | .... | .... | 6 |
| Suspect cases under out-patient observation | .... | .... | .... | .... | .... | .... | .... | 20 |
| Incidence of pulmonary tuberculosis (notified cases) | .... | .... | .... | .... | .... | .... | 19% | |
| Non-tuberculous abnormalities diagnosed | .... | .... | .... | .... | .... | .... | .... | 277 |

F. E. HEYMANSON,
Tuberculosis Physician,
Tuberculosis Control Branch.

Appendix V.

ANNUAL REPORT – WOOROLOO SANATORIUM.

For the Year ending, 31st December, 1955.

The Director,
Tuberculosis Control Branch,
Perth Chest Clinic,
17 Murray Street,
PERTH.

I have the honour to present the Annual Report for the year ending 31st December, 1955.

TREATMENT.

Chemotherapy.

Contrary to our practice during the previous three years of using Streptomycin, P.A.S., and Isoniazid in combination, we reverted to the use of combinations of only two early in 1955. As a general rule Streptomycin and Isoniazid were used initially for three to six months, and replaced after this time by Streptomycin and P.A.S. until the patient's discharge, when domiciliary P.A.S. and Isoniazid were advised. As a result of the use of these drugs there was an extremely satisfactory conversion of sputum in patients positive either on direct smear or on culture on admission. In 77 patients who were positive on direct smear, 49 per cent. were negative after three months, and a further 44 per cent. after six months. Of 41 patients positive only on culture of sputum or gastric contents, 93·6 per cent. were negative at the end of three months, and all the remainder at the end of six months. Of all patients positive on direct smear or culture, 97 per cent. were negative after six months.

Surgery.

The outstanding feature of surgical treatment during the year was a marked increase in patients subjected to segmental resection in contrast to the reduced number treated by plombage. Major operations carried out on Sanatorium patients at Royal Perth Hospital and Repatriation General Hospital, with corresponding numbers for 1954 in brackets, were as follows :—

[illegible]

One patient had a mitral valvotomy, and one patient with tuberculosis of the spine had an incision and drainage of the associated cold abscess.

Minor procedures carried out at the Sanatorium were as follows :—

[illegible]

ORAL HYGIENE.

During the year, with the help of Perth Dental Hospital, a most satisfactory dental service was established, and it may now be said that all patients' teeth receive adequate supervision and reparative treatment while they are in the Sanatorium, and the oral hygiene of all patients is carefully checked prior to thoracic surgery.

LABORATORY.

The standard of laboratory investigations carried out under Mr. Briedis, the senior technician, was of a high order. In addition to routine investigations, the laboratory carried out a survey on the comparative efficiency of Loewenstein Jensen medium and other media, particularly penicillin blood agar, with the finding that in the small series of cases investigated, Loewenstein Jensen appeared still to be the most efficient medium for the cultivation of the organisms. Details of laboratory work carried out are listed hereunder :—

Investigation of Sputum.

[illegible]

Other Examinations.

[illegible]

Cultures on Loewenstein Media.

[illegible][illegible]

Agar Cultures for secondary organisms, etc.

[illegible]

| | | | | | | | | | | | |
|--------------------------------------|------|------|------|------|------|------|------|------|------|-----|------------|
| <i>Anti-biotic Sensitivity Tests</i> | | | | | | | | | | ... | 161 |
|--------------------------------------|------|------|------|------|------|------|------|------|------|-----|------------|

Resistance Tests.

[illegible]

| | | | | | | | | | | | |
|----------------------------|------|------|------|------|------|------|------|------|------|------|----------|
| <i>C.S.F. Examinations</i> | | | | | | | | | | | 4 |
|----------------------------|------|------|------|------|------|------|------|------|------|------|----------|

Haematological.

[illegible]

Biochemical.

| | | | | | | |
|---|------|------|------|------|------|----|
| Sugar tolerance tests and blood sugar estimations | .... | .... | .... | .... | .... | 17 |
| Test meals | ... | ... | ... | ... | ... | 4 |

Skin Scrapings.

[illegible]

Sections.

| | | | | | | | |
|---|------|------|------|------|------|------|-----|
| Sections prepared (post mortem specimens) | .... | .... | .... | .... | .... | .... | 298 |
| Sections prepared (biopsy specimens) | .... | .... | .... | .... | .... | .... | 90 |

[illegible]

| Preparation of Culture Media. | | | | | | | | | | doz. |
|--------------------------------|------|------|------|------|------|------|------|------|------|-------|
| Loewenstein Jensen Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1,050 |
| Loewenstein Anti-biotic Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 113 |
| Loewenstein Jensen Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 233 |
| Penicillin Blood Agar Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 76 |
| Charcoal Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 33 |
| American Trudeau Society Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 20 |
| Egg yolk potato Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 20 |
| Cream Egg Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 33 |
| Petragnani Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 20 |
| Harrold Egg yolk Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 20 |
| Charcoal Liquid Media | .... | .... | .... | .... | .... | .... | .... | .... | .... | 10 |
| Total | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1,628 |

Once again a comparison of the results of culture and guinea pig inoculation revealed that there was little or no necessity for the use of guinea pigs in routine investigations, and the continued use of these animals would appear to be of doubtful value.

X-RAY.

An efficient standard of radiography was maintained throughout the year, and the X-Ray technician, Mr. D. Griffiths, is to be congratulated particularly on the high quality of tomograms, both anterior-posterior and lateral, which was achieved, in spite of the age and quality of his equipment. Details of X-Ray investigations are as follows :—

| | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|-------|
| Routine P.A. and lateral X-Rays of chest | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3,493 |
| Tomograms | .... | .... | .... | .... | .... | .... | .... | .... | .... | 209 |
| Bronchograms | .... | .... | .... | .... | .... | .... | .... | .... | .... | 27 |
| X-Rays of extremities | .... | .... | .... | .... | .... | .... | .... | .... | .... | 158 |
| Dental films | .... | .... | .... | .... | .... | .... | .... | .... | .... | 108 |
| Sinuses and skull | .... | .... | .... | .... | .... | .... | .... | .... | .... | 19 |
| Abdomen | .... | .... | .... | .... | .... | .... | .... | .... | .... | 31 |
| Sinograms | .... | .... | .... | .... | .... | .... | .... | .... | .... | 10 |
| Barium meals and clysmas | .... | .... | .... | .... | .... | .... | .... | .... | .... | 19 |
| Intravenous Pyelograms | .... | .... | .... | .... | .... | .... | .... | .... | .... | 13 |
| Cholecystograms | .... | .... | .... | .... | .... | .... | .... | .... | .... | 8 |
| Spine and pelvis | .... | .... | .... | .... | .... | .... | .... | .... | .... | 115 |
| Electrocardiograms | .... | .... | .... | .... | .... | .... | .... | .... | .... | 18 |

REHABILITATION.

Throughout the year regular meetings were conducted to consider the rehabilitation of each individual patient, and our excellent liaison was maintained with Mr. P. Perry, the Education and Training Officer of the Social Services Department, whose regular visits to the Sanatorium permitted him to supervise the commencement of vocational training of all patients in whom this was considered necessary. Subsequent to their discharge the supervision of their further training is continued as out-patients, so that complete continuity of vocational guidance is achieved. During the year :—

- 41 patients commenced vocational training ;
- 12 migrants received courses in Migrant English ;

and enquiries regarding return to previous employment were made on behalf of 17.

Mr. J. Grady relinquished his duties as rehabilitation officer to commence work as a clerk on the administrative side, and his place was ably taken by Mr. R. Antoine.

OCCUPATIONAL THERAPY.

Miss D. Legge was responsible for all occupational therapy until her resignation on July 15, after which the institution was without an occupational therapist until November, when Miss E. Bains commenced duty as acting occupational therapist. Miss E. Adam, appointed senior occupational therapist, will commence duties early in 1956.

Art therapy continued to be popular with a fair percentage of patients, who have derived benefit from the weekly visits of Miss Mary Nunn, part-time art therapist.

SOCIAL SERVICES.

Social and domestic problems of patients were again the responsibility of Miss M. Walters, the almoner, whose prompt assistance to all patients requiring help contributed considerably to their mental welfare. Action was taken on behalf of 269 cases in all, the services rendered being as follows :—

[illegible]

In view of Miss Walters' conscientious service, sincere regret was felt when she left the institution on 31st December to take up duties at King Edward Memorial Hospital. In an institution of this nature social problems are of daily occurrence, and it is gratifying to know that a replacement for Miss Walters may be readily available.

LINLEY VALLEY COLONY.

The tin-smithy continued to employ a number of patients on part-time work, and in addition the colony orchard provided full-time employment for one ex-patient, and part-time work for several others during the peak of the apple and pear season. Difficulties are still experienced in finding markets for the products of the tinsmithy, and this fact has interfered substantially with the value of this project as a satisfactory medium of rehabilitation. Further efforts are constantly being made, however, to discover products for which there is a satisfactory market, and which are within the range of manufacture in the factory.

PATIENTS' AMENITIES AND ENTERTAINMENTS.

Our thanks are due to the Adult Education Board for the provision of educational talks and recitals of Everyman's Music during the winter months. The Red Cross provided transport for the artists and speakers whenever necessary, and in addition are always ready to help with transport of other entertaining parties. It is a pleasure to record our sincere appreciation of their ready support.

VITAL STATISTICS.

Admissions.

New Admissions.

[illegible]

Readmissions.

[illegible]

Of the male admissions 14 per cent. were miners or ex-miners suffering from silicosis with superimposed tuberculosis, and of the male readmissions 22 per cent. were suffering from silico-tuberculosis. Of the admissions 34 (15 per cent.) were migrants who had been in Australia for under five years. Of these 14 (six per cent.) were British and 20 (nine per cent.) were from non-British countries.

The method of diagnosis of the patients admitted was as follows :—

Mass Survey (Direct).

[illegible]

Relation of relapse to previous treatment.

Failed or complicated A.P.—

| | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|---|
| Pleural effusion on termination of A.P. | .... | .... | .... | .... | .... | .... | .... | .... | 2 |
| Failed A.P. | .... | .... | .... | .... | .... | .... | .... | .... | 2 |
| Infected plomb space | .... | .... | .... | .... | .... | .... | .... | .... | 2 |
| Post-pneumonectomy empyema | .... | .... | .... | .... | .... | .... | .... | .... | 1 |

In two patients with uni-lateral plombage, and in one case with a satisfactory artificial pneumothorax, progression of pre-existing contralateral disease occurred.

Of the readmissions four only had been “irregular discharges” on previous admission.

DISCHARGES.

| | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|-----|
| Discharges, including irregular discharges | .... | .... | .... | .... | .... | .... | .... | .... | 208 |
| Transfers to other institutions, regarded as discharged | .... | .... | .... | .... | .... | .... | .... | .... | 68 |
| Total | .... | .... | .... | .... | .... | .... | .... | .... | 276 |

All the discharged patients were negative on sputum and/or gastric culture, except five, of whom four were positive on direct smear and one on culture only. Two of these were transferred to Linley Valley Colony, and two permitted to go on “extended leave” to satisfactory home conditions, under close supervision.

Irregular Discharges.

| | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|----|
| (a) Recalcitrant or alcoholic | .... | .... | .... | .... | .... | .... | .... | .... | 14 |
| (b) Mentally or tempermentally unsuited for Sanatorium regime | .... | .... | .... | .... | .... | .... | .... | .... | 4 |
| Total | .... | .... | .... | .... | .... | .... | .... | .... | 18 |

All these patients were negative on culture on leaving the Sanatorium.

For the purpose of estimating the average time in the Sanatorium all cases admitted for investigation and discharged within two months as non-tuberculous, or inactive, are excluded. Excluded also, are cases transferred shortly after admission to other institutions such as Repatriation General Hospital, and Royal Perth Hospital, and patients listed as “irregular discharges,” leaving hospital before three months :—

| | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|----------|
| Repatriation cases immediately transferred | .... | .... | .... | .... | .... | .... | .... | .... | 3 |
| Short stay, non-tuberculous cases | .... | .... | .... | .... | .... | .... | .... | .... | 11 |
| Irregular discharges, under three months | .... | .... | .... | .... | .... | .... | .... | .... | 3 |
| Cases for investigation and assessment, discharged under two months | .... | .... | .... | .... | .... | .... | .... | .... | 11 |
| Cases transferred to Repatriation General Hospital for surgery and not returned | .... | .... | .... | .... | .... | .... | .... | .... | 6 |
| Transferred to Fremantle Hospital after short Sanatorium course | .... | .... | .... | .... | .... | .... | .... | .... | 3 |
| Total | .... | .... | .... | .... | .... | .... | .... | .... | 37 |
| Balance of patients receiving “full” Sanatorium regime | .... | .... | .... | .... | .... | .... | .... | .... | 239 |
| Average duration of stay | .... | .... | .... | .... | .... | .... | .... | .... | 45 weeks |

DEATHS.

| | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|----|
| At the Sanatorium | .... | .... | .... | .... | .... | .... | .... | .... | .... | 16 |
| At Royal Perth Hospital— | | | | | | | | | | |
| Following surgery | .... | .... | .... | .... | .... | .... | .... | .... | .... | 4 |
| Leukaemia | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Total | .... | .... | .... | .... | .... | .... | .... | .... | .... | 21 |

Of the deaths within the Sanatorium, five only were due directly to tuberculosis. The tuberculosis of three others was considered arrested or inactive, but death was due to gross pulmonary insufficiency due to fibrosis and emphysema, with or without final right heart failure. In eight cases tuberculosis was considered as non-contributory to death, which was due to other causes as follows :—

| | | | | | | | | | | |
|--------------------------------|------|------|------|------|------|------|------|------|------|---|
| Coronary occlusion | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Carcinoma of the lung | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 |
| Leukaemia | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Hodgins disease | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Senility and broncho-pneumonia | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 |

Thus of the 21 deaths occurring in Sanatorium patients, 12 only (56 per cent.) were due directly or indirectly to tuberculosis.

LEPROSARIUM.

There were three admissions during the year, and two patients were discharged, and one allowed to go on extended leave under home supervision. As a routine Isoniazid and Conteben were used in combination, with encouraging results..

MAINTENANCE AND REPAIRS.

General maintenance to buildings was continued, and the sewage disposal plant was completed, and is now in satisfactory operation.

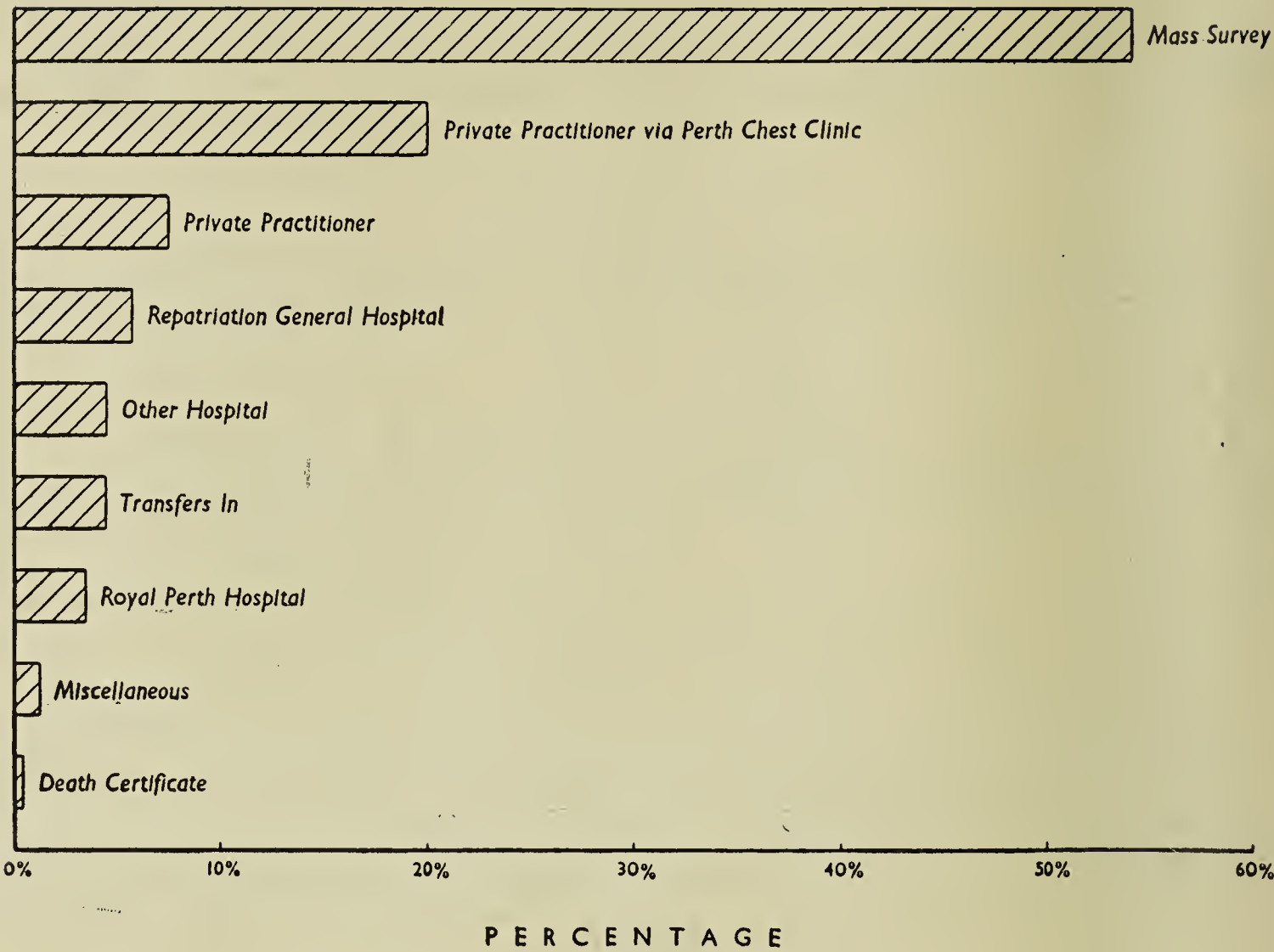
CONCLUSION.

In concluding this report, it is fitting to record my sincere appreciation of the efficient work of my medical officers throughout my term of absence from the Sanatorium on study and long service leave. Especially I desire to express my appreciation of Dr. D. D. Letham's work as acting medical superintendent. In addition I would record my gratitude for the loyal support of Matron Lochhead and her nursing staff, and of Mr. J. Cross and all members of the administrative and general staff. Finally I desire to express my appreciation to you, Sir, for your ready assistance throughout the year, to the Commissioner of Public Health, and the Under Secretary for Health, and to the officers of their department for their ready assistance and co-operation throughout the year.

H. R. ELPHICK, M.B.B.S., M.R.C.P., M.R.A.C.P.,
Medical Superintendent.

Table III.

GRAPH SHOWING THE SOURCE OF NOTIFICATION OF CASES OF
PULMONARY TUBERCULOSIS AS PERCENTAGE OF
TOTAL NOTIFICATIONS.



Appendix VI.

Western Australia.

PULMONARY TUBERCULOSIS.

| Year. | | | | | | | Population in 1,000s. | Notifications Received. | Incidence Rate per 100,000 Population. | Deaths Registered. | Mortality Rate per 100,000 Population. |
|---|------|------|------|------|------|------|--------------------------|----------------------------|---|-----------------------|---|
| 1911 | .... | .... | .... | .... | .... | .... | 287 | 259 | 90.2 | 190 | 66.2 |
| 1912 | .... | .... | .... | .... | .... | .... | 301 | 429 | 142.5 | 220 | 73.1 |
| 1913 | .... | .... | .... | .... | .... | .... | 313 | 424 | 135.5 | 206 | 65.8 |
| 1914 | .... | .... | .... | .... | .... | .... | 323 | 353 | 109.3 | 229 | 70.9 |
| 1915 | .... | .... | .... | .... | .... | .... | 321 | 336 | 104.7 | 233 | 72.6 |
| 1916 | .... | .... | .... | .... | .... | .... | 313 | 511 | 163.5 | 225 | 71.9 |
| 1917 | .... | .... | .... | .... | .... | .... | 306 | 464 | 151.6 | 217 | 70.9 |
| 1918 | .... | .... | .... | .... | .... | .... | 308 | 432 | 140.5 | 245 | 79.5 |
| 1919 | .... | .... | .... | .... | .... | .... | 320 | 467 | 145.9 | 289 | 91.6 |
| 1920 | .... | .... | .... | .... | .... | .... | 330 | 442 | 133.9 | 259 | 78.4 |
| 1921 | .... | .... | .... | .... | .... | .... | 334 | 424 | 126.9 | 277 | 82.9 |
| 1922 | .... | .... | .... | .... | .... | .... | 341 | 387 | 113.8 | 256 | 75.1 |
| 1923 | .... | .... | .... | .... | .... | .... | 351 | 361 | 102.8 | 216 | 61.5 |
| 1924 | .... | .... | .... | .... | .... | .... | 363 | 381 | 104.6 | 228 | 62.8 |
| 1925 | .... | .... | .... | .... | .... | .... | 373 | 403 | 108.4 | 259 | 69.4 |
| 1926 | .... | .... | .... | .... | .... | .... | 381 | 415 | 108.2 | 252 | 66.1 |
| 1927 | .... | .... | .... | .... | .... | .... | 392 | 409 | 104.3 | 231 | 56.4 |
| 1928 | .... | .... | .... | .... | .... | .... | 408 | 395 | 96.8 | 282 | 69.1 |
| 1929 | .... | .... | .... | .... | .... | .... | 421 | 400 | 95.0 | 245 | 53.4 |
| 1930 | .... | .... | .... | .... | .... | .... | 429 | 569 | 132.6 | 218 | 50.8 |
| 1931 | .... | .... | .... | .... | .... | .... | 432 | 372 | 86.1 | 223 | 51.6 |
| 1932 | .... | .... | .... | .... | .... | .... | 435 | 339 | 77.9 | 203 | 46.7 |
| 1933 | .... | .... | .... | .... | .... | .... | 439 | 295 | 67.2 | 207 | 47.2 |
| 1934 | .... | .... | .... | .... | .... | .... | 442 | 287 | 64.9 | 218 | 49.3 |
| 1935 | .... | .... | .... | .... | .... | .... | 447 | 270 | 60.4 | 210 | 47.0 |
| 1936 | .... | .... | .... | .... | .... | .... | 452 | 338 | 74.8 | 193 | 42.7 |
| 1937 | .... | .... | .... | .... | .... | .... | 457 | 239 | 53.0 | 172 | 37.6 |
| 1938 | .... | .... | .... | .... | .... | .... | 464 | 247 | 53.2 | 177 | 38.1 |
| 1939 | .... | .... | .... | .... | .... | .... | 470 | 202 | 43.0 | 179 | 38.1 |
| 1940 | .... | .... | .... | .... | .... | .... | 473 | 231 | 48.8 | 181 | 38.3 |
| 1941 | .... | .... | .... | .... | .... | .... | 474 | 154 | 32.5 | 185 | 39.0 |
| 1942 | .... | .... | .... | .... | .... | .... | 477 | 113 | 23.7 | 175 | 36.7 |
| 1943 | .... | .... | .... | .... | .... | .... | 477 | 273 | 57.3 | 144 | 30.2 |
| 1944 | .... | .... | .... | .... | .... | .... | 481 | 219 | 45.4 | 134 | 27.9 |
| 1945 | .... | .... | .... | .... | .... | .... | 488 | 271 | 55.5 | 149 | 30.5 |
| 1946 | .... | .... | .... | .... | .... | .... | 493 | 343 | 69.6 | 163 | 33.1 |
| 1947 | .... | .... | .... | .... | .... | .... | 502 | 372 | 74.0 | 128 | 25.4 |
| 1948 | .... | .... | .... | .... | .... | .... | 515 | 325 | 63.1 | 157 | 30.5 |
| 1949 | .... | .... | .... | .... | .... | .... | 533 | 499 | 93.6 | 123 | 23.1 |
| 1950 | .... | .... | .... | .... | .... | .... | 558 | 586 | 104.8 | 129 | 23.1 |
| DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST. | | | | | | | | | | | |
| 1950 | .... | .... | .... | .... | .... | .... | 558 | 586 | 104.8 | 125 | 22.4 |
| 1951 | .... | .... | .... | .... | .... | .... | 580 | 467 | 80.4 | 76 | 13.1 |
| 1952 | .... | .... | .... | .... | .... | .... | 601 | 508 | 84.4 | 75 | 12.5 |
| 1953 | .... | .... | .... | .... | .... | .... | 621 | 378 | 60.6 | 43 | 6.92 |
| 1954 | .... | .... | .... | .... | .... | .... | 640 | 348 | 54.3 | 57 | 8.9 |
| 1955 | .... | .... | .... | .... | .... | .... | 659 | 413 | 62.7 | 31 | 4.7 |

Appendix VII.

REPORT BY THE EPIDEMIOLOGIST.

To the Commissioner of Public Health.

The year under review was an unsatisfactory one because of an epidemic of diphtheria, an increase in intestinal infections reported, and little reduction in the incidence of most of the other communicable diseases with the exception of poliomyelitis. It was, however, a notable year because of preparations for the introduction of two considerable measures likely to curtail the prevalence of communicable diseases. The first was the Poliomyelitis Immunisation Project, the second the Health Education Organisation.

Over the last few years it has become evident that the prevention of poliomyelitis is impossible without the aid of a specific immunising agent, and news of the American Salk Trial was awaited with eagerness. So far as health education is concerned, control of several communicable diseases is largely dependent on public co-operation, and experience elsewhere indicated that a special organisation was required for the purpose ; the development of this additional weapon in the prevention and control of transmissible diseases is therefore anticipated with enthusiasm.

The more significant subjects requiring extended comment will be dealt with individually.

DIPHTHERIA.

The 480 confirmed cases (with six deaths) during 1955 is the highest annual tally since the war, and warrants a searching review of the control methods hitherto used. There is universal agreement among public health authorities the world over that the only reliable control measure is artificial immunisation of the entire child community. The success of mass immunisation in attaining this objective has been clearly demonstrated in the United Kingdom, Canada and the U.S.A. The logical assumption must be that immunisation in Western Australia is inadequate, but it is no easy matter to identify the quality and degree of this inadequacy. Yet this is a fundamental requirement in mobilizing a renewed attack on the disease, and available information must be carefully examined.

Immunisations are carried out in this State by two agencies. The first is by local health authorities (from which data is available) ; the second by private medical practitioners (from whom records cannot be procured). There is reason to believe that the proportion of private immunisations is substantial and increasing, but an accurate estimate of the proportion is not possible. It is therefore impracticable to determine the precise number of children who have been immunised in this State. The alternative of carrying out a representative survey is likewise impractical because individual records over a reasonable age range are not available.

A personal immunisation record card was devised during the year and distributed to all local authorities and to all doctors free of charge. It has already been accepted by parents with enthusiasm and is popular with the doctors as well, but this record card has not been in use long enough to provide the basis for a suitable survey.

In the meantime the records of immunisations carried out at local authority clinics, routine enquiries conducted by the schools' medical officers, and other sources of information, indicate that at least 70 per cent. of school children have received two or more immunising injections against this disease. There is a residuum of children however about which information is lacking ; and since 77 per cent. (368) ; of the cases reported in 1955 were under the age of 15; and since approximately 50 per cent. of these had not been immunised, it is probable that the unimmunised residue in the community is to a large extent responsible for keeping the disease going. It is significant that the early cases during recent outbreaks in this State have been unimmunised children suffering from the disease in a florid form, whereas the latter cases include inoculated children who suffer from the disease in a relatively mild form.

In examining the reasons for the persistence of these unimmunised children two possibilities are immediately obvious.

1. Some parents may not be sufficiently impressed by the necessity to use immunisation. To some, diphtheria is just a form of sore throat which only very rarely leads to dangerous complications such as obstruction of the windpipe or damage to the heart. The risk is not sufficiently close or great to warrant the comparative inconvenience of a special journey to the immunisation clinic or the doctor's surgery. This unsatisfactory attitude of mind on the part of a relatively small number of parents can be remedied by better health education directed at this particular group. In the past a steady stream of publicity has been maintained in the form of advertisements, press articles, posters, radio broadcasts, cinema slides and the like ; and these efforts have been intensified during the periods of high local prevalence. It is clear, however, that these measures are inadequate and there is scope for a special health education agency to utilise new techniques in a more persuasive way, perhaps using the assistance of citizens' groups,

2. Immunisation facilities may not be sufficiently accessible. The doctor's surgery and local authority clinics may not be convenient enough to meet the requirements of all parents.

Supplementary facilities must therefore be considered. Two obvious possibilities are the infant health centres on the one hand and mobile clinics on the other. A great majority of babies born in this State are taken to infant health centres more or less regularly up to the age of 12 months, and no added inconvenience or additional journey would be necessary for immunisation. In the past the idea of using infant health centres for immunisation purposes has been resisted by some on the grounds that the measure savoured of disease, but it is the plain duty of these centres to prevent babies from getting sick, and their co-operation is essential in the prevention of diphtheria. Indeed it is significant that in those countries where diphtheria has been conquered, immunisation services are intimately linked with infant health centres. Immunisation facilities should therefore be extended to infant health centres as quickly as possible.

Suitably equipped mobile clinics have not been available in the past, but these can be used with profit in special circumstances, and in selected areas. The Salk Vaccine Clinics offer possibilities in this regard when their immediate task has been completed.

3. *Compulsory Immunisation.*

During the course of the last few years a considerable body of opinion has built up in favour of compulsory immunisation. Requests for compulsion have come from local governing bodies, from deputations, and from private individuals. These requests have hitherto been rejected on the grounds that adequate immunisation has been achieved on a voluntary basis elsewhere and that the development of a specialised health education agency would render compulsion unnecessary. A further consideration was the occurrence of post-inoculation poliomyelitis, rare though this accident may be. Nevertheless, with the protection afforded by mass immunisation against poliomyelitis, this objection would be removed ; and if appreciable numbers of unimmunised children continue to contract diphtheria I would recommend that our previous resistance to compulsory immunisation on technical grounds be withdrawn.

POLIOMYELITIS AND THE SALK VACCINE.

Only 33 confirmed cases of poliomyelitis were reported during 1955. This is the lowest prevalence recorded since the first major epidemic in 1948.

During the year the success of the mass field trial of Salk Vaccine was announced in America by Dr. Thomas Francis, Chief of the Evaluation Unit, and was followed by a nation-wide immunisation campaign confined in the first instance to first and second grade school children. The tragedy of the so-called Cutter Incident, which was attributed to persistence of live virus in some batches of American Vaccine was a serious set-back which led to a complete review of controls in America, and special safeguards being examined in Australia. During the latter part of the year advice was received from the Commonwealth Government that Salk Vaccine was to be manufactured in Australia at the Commonwealth Serum Laboratories, Melbourne, and that an appropriate quota of this Vaccine would be made available to the Public Health Authorities for organised immunisation in Western Australia under certain terms and conditions. These included the following :—

1. That the State would accept responsibility for the costs of organisation and administration within W.A.
2. That the Vaccine would be administered in accordance with priorities agreed upon on a nation-wide basis.
3. That adequate records be kept and suitable arrangements be made for surveillance of the results.

All States accepted these terms and conditions, and a meeting of the Poliomyelitis Committee of the National Health and Medical Research Council was held in Melbourne early in November to discuss problems connected with the immunisation campaign. At this meeting it was learnt that the Commonwealth's output was to be approximately 440,000 doses a month, with effect from June, 1956, and that West Australia's quota on a per capita basis would be approximately 30,000 doses a month. It was agreed that the initial mass immunisation campaign should be confined to children, and that special arrangements be made wherever practicable for the immunisation of expectant mothers. These and many other technical details were referred to a meeting of the State Poliomyelitis Advisory Council on November 15th, and the meeting resolved as follows :—

Having carefully considered the available evidence, this Committee recommends the use of Poliomyelitis Vaccine in an organised immunisation campaign within Western Australia ; the meeting also approved in principle of the Department's tentative plans for mass immunisation based on mobile clinics supplemented by a number of stationary clinics.

Towards the close of the year preparations for mass inoculation on a geographical basis occupied much time and thought. It was decided to base the campaign mainly on schools, and every school in the State was pinpointed, and the anticipated enrolment for 1956 ascertained with the assistance of officers from the Education Department. The proposal was that a mobile clinic should visit each school in turn and immunise all pupils whose parents were agreeable to immunisation. A target of approximately 300 inoculations a day was fixed for each mobile clinic ; amounting to 1,500 in a five-day week, or 6,000 in a

lunar month. The metropolitan area was divided into 12 zones, each containing some 6,000 school children, and it was planned to allot two mobile clinics to the area. It would take one clinic one month to administer one injection to all children within one zone, and a second month to complete second injections. Thus, it would be possible for one clinic to complete two injections in six zones in one year ; so that with two clinics operating all the school children in the metropolitan area could be effectively protected within a year. Because pre-school children were not as readily accessible as school children, it was decided to deal with these by the provision of stationary clinics organised by local health authorities at five or six selected centres.

In the country the daily target of the mobile clinics was set at 150 inoculations a day, amounting to approximately 3,000 in one month. The country was therefore divided similarly into 12 zones each containing some 3,000 school children. One of these zones, comprising of the entire North-West, was to be dealt with by medical officers of the North-West Service. The other 11 zones were to be serviced by two mobile clinics. Unlike the metropolitan clinics, these country clinics were to be made responsible for the immunisation not only of school children but pre-school children as well, and arrangements were envisaged whereby these would be brought to school for immunisations. To supplement the activities of the mobile clinics in the country it was decided to establish stationary clinics at five of the larger country centres where local facilities were suitable, and adequate surveillance assured. These stationary clinics were to be made responsible for immunisation of all children including pre-school children and infants within their respective areas. These arrangements in the country would ensure that all children in the country would be protected within 12 months.

This geographical basis involved the visiting of each zone in turn and the maintenance of progressive systematic immunisation carried out in an orderly fashion and under the closest supervision, but protests were anticipated from areas to be visited relatively late in the itinerary. Nevertheless, in view of the limited supply of Vaccine it was inevitable that no matter what system was adopted, some children would be done before others, and a few would have to wait for as long as 10 months for the first inoculation.

The design and construction of caravans suitable as mobile clinics presented many problems. They had to be equipped with running water, power, sterilization facilities, and refrigeration (as the Vaccine required to be kept at a few degrees above freezing point in order to retain its potency). On the advice of several technical experts it was decided to equip the caravans with small petrol-driven motors and generators to charge a series of batteries to provide power for the refrigerator. A number of items of equipment had to be specially tested, and others were designed and manufactured locally.

By the end of the year the main outlines of the Immunisation Plan had been etched out so that preparations could be completed within the first few months of 1956.

MEDICAL ENTOMOLOGY.

In the Annual Report for 1953 (page 95) reference was made to the dearth of knowledge concerning insects of medical significance in Western Australia ; and the need for special investigation in this field, particularly in regard to mosquitoes, was indicated. During 1954 Dr. E. P. Hodgkin of the University and Mr. E. J. Britten of the Department completed a survey of mosquito fauna in the northern part of the State. In 1955 arrangements were made to carry out a systematic investigation over the southern part of the State, and the survey was entrusted to Mr. Britten working in consultation with Dr. Hodgkin. The territory involved was subdivided into a series of eight zones, and it was proposed that a period of six weeks be allotted to each zone, four weeks for collection of specimens and two weeks for their identification. The survey began in March, and by July three zones had been completed when Mr. Britten proceeded on long-service leave. While in the Eastern States arrangements were made for him to attend the Entomological Division of the Sydney School of Public Health for a fortnight's special instruction. While returning overland in December, he collected and examined mosquito specimens at selected points along the Eyre Highway.

The only anopheline species detected in these southern zones so far has been *Anopheles annulipes*, while the wide variety of culicines included none of known medical importance. The survey will be completed during 1956, and a comprehensive report will be prepared and placed on record as soon as possible.

ZOONoses.

As a result of a recommendation originating from A.N.Z.A.A.S., and supported by the National Health and Medical Research Council, a closer liaison between the Public Health and the Veterinary Authorities was established during the year by the formation of a Zoonoses Committee, consisting of the Chief Veterinary Surgeon ; the Principal, Animal Health and Nutrition Laboratory ; Tuberculosis Physician ; Bacteriologist ; and Epidemiologist (Convenor and Recorder).

The main aims of this Committee are to facilitate the exchange of information, to ensure the closest co-operation, and to reduce to a minimum the risk of animal diseases being transmitted to man in Western Australia.

Four meetings were held during the year and the ensuing report is intended as a summarised record of the proceedings of this Committee.

1.—BOVINE TUBERCULOSIS.

(a) *Prevalence in Cattle.*

It was estimated that there were approximately 800,000 cattle in Western Australia, of which 30,000 were concerned with the production of milk for retail distribution, while 70,000 were used for the production of butter and cheese. The tuberculin reactor rate among the 30,000 milk producers was 1·2 per cent. The estimated rate from the butter fat areas was up to 5 per cent., but as all milk from these herds was pasteurised before processing there was no risk of tuberculosis being transmitted to humans from this source.

(b) *Incidence in Humans.*

No reliable information concerning the incidence of Bovine Tuberculosis in human beings in this State is available. Clinical differentiation is uncertain and bacteriological typing has not yet become a routine procedure, although work along these lines is being developed.

(c) *Review of Existing Control Measures.*

The two existing control measures—tuberculin testing of dairy cattle and pasteurisation, offer the best prospect of preventing bovine infection being transmitted to man.

Dairy cattle licensed under the Milk Act are tuberculin tested and reactors are destroyed. This tuberculin testing programme has been in operation for some six years and during that time the general reactor rate has been reduced from about 12 per cent. to a little more than 1 per cent. Although the prevalence of the disease in butter fat herds was a loophole, especially as milk herds could be reinforced from butter fat areas, constant, repeated and extended tuberculin testing offer the best practical safeguard.

Information from the Milk Board indicated that 99·9 per cent. of milk distributed in the metropolitan area was pasteurised and that efforts were being made to extend pasteurisation to all major country centres.

The pasteurisation method used was H.T.S.T. (enclosed plate), milk being heated to 162-175F. for 15-16 seconds, and then cooled instantaneously. It is a thermostatically controlled process and all equipment used is of stainless steel. Plant efficiency is safeguarded by automatic temperature recorders, diversionary valves for reheating where necessary, and regular testing (reductase, phosphatase and coliform culture).

The vast bulk of all milk pasteurised is bottled mechanically. There are five pasteurisation plants in Perth and one approaching completion at Brunswick Junction.

It is estimated that over 60 per cent. of all milk consumed in this State at the present time is pasteurised and that the proportion would increase substantially when the Brunswick Junction plant comes into operation.

The daily output of pasteurised milk at the present time is some 33,000 gallons or nearly one quarter of a million bottles.

When the Milk Act was introduced in 1946 the Holder system of pasteurisation was in operation. Only some 30 per cent. of milk consumed was pasteurised, and wide-mouthed bottles with unsatisfactory paper seals were in use.

(d) *Conclusion.*

The combination of a very low reactor rate among dairy cattle (1·2 per cent.) and the very high proportion of pasteurised milk distributed in the metropolitan area (99·9 per cent.) indicated that Bovine Tuberculosis was unlikely to be an appreciable problem at the present time and that with increasing tuberculin tests and pasteurisation, the risk of Bovine Tuberculosis being transmitted to human beings in the future was very remote.

2.—BRUCELLOSIS.

(a) *Prevalence in Cattle.*

“Contagious abortion” has occurred throughout the dairying districts of Western Australia. Prior to 1946 when vaccination against the disease was introduced, the estimated over-all prevalence of brucella infection in cattle was about 10 per cent. Many cows remain infective for life and untreated milk is a constant hazard.

In 1946 systematic immunisation of yearlings with Strain 19 vaccine began on a considerable scale and had progressed steadily ever since. The vaccine contains a live culture of established virulence and is given in a single dose of 5 ml. subcutaneously. It was administered on a voluntary basis for a fee of

2s. The test-and-slaughter principle was not only impracticable but prohibitively expensive and the best prospect of controlling infection in cattle was extended vaccination. At the present rate, some 70 per cent. of heifers produced annually in the dairying districts was being protected.

So far as is known, only the abortus type of brucella infection occurs in animals in Western Australia.

(b) *Incidence in Humans.*

Human brucellosis is known to have occurred in Western Australia at least since 1943. It is a notifiable disease and approximately 80 cases have so far been recorded at the Department.

Up to 1954 diagnosis had been based on clinical and serological data only and the precise type of brucella involved was uncertain, although epidemiological evidence suggested that the abortus type was the only one responsible.

The first isolation of *brucella abortus* by blood culture from a human patient was accomplished by Dr. Kovacs in December, 1954 ; the patient being a doctor's child. Since then other isolations have been achieved and all have proven to be *brucella abortus*.

The majority of human infections in this State was probably attributable to the consumption of unpasteurised milk, and increasing pasteurisation was associated with diminishing incidence of the disease. A number of infections, however, among farmers and veterinarians were attributable to direct contact with infected animals or contaminated material.

(c) *Review of Existing Control Measures.*

The two existing control measures—Strain 19 inoculation of heifers, and pasteurisation—were likely to eradicate this disease in time ; but there was some need for further education of dairy farmers in order that the maximum co-operation could be obtained.

(d) *Conclusion.*

Overt brucellosis of the abortus type is an endemic disease in this State, but its prevalence is likely to be diminished progressively as inoculation of animals, pasteurisation of milk, and education of dairy farmers are extended.

Appendix VIII.

THE HISTORY OF SOME COMMUNICABLE DISEASES IN WESTERN AUSTRALIA (1828-1951) PART V.

By Dr. D. J. R. Snow.

The four preceding parts of this feature dealt with smallpox and plague (Ann. Rpt., 1951), diphtheria, scarlet fever, whooping cough and measles (Ann. Rpt., 1952), influenza, typhoid fever and murine typhus (Ann. Rpt., 1953), and brucellosis and rubella (Ann. Rpt., 1954). The present instalment includes available data on meningococcal infection.

XII. MENINGOCOCCAL INFECTION (1828-1955).

Data concerning the history of meningococcal infection in Western Australia is unsatisfactory. The two main indices of past prevalence are death records and notifications. Deaths registered annually since 1897 have been published by the Government Statistician, but considerable changes in international classification have made it difficult to obtain an accurate picture of mortality trends over the last 55 years. For example (as will be seen from the subsequent tables), prior to 1906, deaths from meningococcal infection would have been included in the class "Inflammation of the Brain or its Membranes." With the advent of the Bertillon system in 1907 the term "Cerebro-spinal Meningitis" was included. A modification in 1922 differentiated between "Epidemic Cerebro-spinal Meningitis" and "Non-Epidemic Cerebro-spinal Meningitis." A further modification in 1931 introduced the term "Cerebro-spinal Fever."

As a result the death records of meningococcal infection are by no means clear. All that can be said is that this group of conditions has accounted for a small but consistent number of deaths in all years since records have been kept.

So far as morbidity is concerned, the disease "cerebro-spinal fever" has been notifiable at least since 1911, but the earliest official correspondence relating to it is a communication from the military authorities dated July 31, 1918, reporting particulars of three patients from the Eastern States who developed the disease on a westward bound troopship. One patient died. A second was landed "in quarantine" at Albany, and the third was admitted to the Infectious Diseases Hospital at Subiaco. During the ensuing five months a number of other cases occurred but there is no record of an epidemic.

The accompanying table of notifications indicates sporadic prevalence from 1911 to 1939 inclusive (with the exception of 1916 when 75 notifications were registered). In 1940 there were 64 notifications but epidemic prevalence was maintained during the war years 1941-44 when over a thousand cases were recorded. This high prevalence appears to have originated in military establishments and been maintained among service personnel.

During August 1940 several cases occurred at Northam and Melville Military Camps, and the then Commissioner (Dr. Everitt Atkinson), in reviewing previous civilian prevalence, stated in a memorandum to Army Headquarters that only 23 cases had been recorded in Western Australia during the ten years preceding 1940, that he had seen "nothing of an epidemic type since the last war"... and that the great majority of civilian cases had been infants or young children.

An unusual number of cases continued to occur among servicemen during October, this experience apparently being shared by other States, for on November 14, 1940, Army Headquarters in conjunction with the National Health and Medical Research Council found it necessary to distribute "Notes for Guidance" in treating the disease.

Considerable prevalence (five or six cases a week) continued until August, 1941, during which month a record tally of 110 notifications were registered. In September there were 107 notifications, but thereafter prevalence diminished to less alarming figures, but was maintained at unaccustomed level until the latter part of 1944 when sporadic pre-war incidence was restored.

During the war years, when incidence was more or less sustained at epidemic level, a number of unusual incidents occurred, and one is worthy of special mention. During the latter part of 1943, two patients with meningococcal meningitis died with a secondary pyocaneus infection; and the organism involved was recovered from syringes used for anaesthesia and spinal tapping. The Commissioner therefore circularized all hospitals to the effect that the immersion of syringes for two hours in methylated spirits was inadequate as a sterilization procedure.

From 1945 to 1954 the average annual number of infections has been 28. On January 16th, 1951, on the recommendation of the National Health and Medical Research Council which sought to secure uniform legislature throughout the Commonwealth, the term “ Meningococcal Infection ” was introduced to replace and include cerebro-spinal fever. Although the vast majority of cases attributed to meningococcal infection present as meningitis, some present as septicaemia, and while being of public health significance, would not have been notified under the old term “ Cerebro-spinal Fever ”. Furthermore, under the old system of notification, a number of cases of meningitis not of meningococcal origin were notified.

(A) DEATHS :—W.A. 1907–1953 :—“ MENINGOCOCCAL INFECTION ” “ CEREBRO-SPINAL MENINGITIS ”. “ SIMPLE MENINGITIS ”, ETC.

Classification prior to adoption of Bertillon System : 1897–1906.

| Year. | | | Deaths. |
|-------|------|------|---------|
| 1897 | .... | .... | 47 |
| 1898 | .... | .... | 42 |
| 1899 | .... | .... | 27 |
| 1900 | .... | .... | 36 |
| 1901 | .... | .... | 41 |
| 1902 | .... | .... | 55 |
| 1903 | .... | .... | 47 |
| 1904 | .... | .... | 47 |
| 1905 | .... | .... | 37 |
| 1906 | .... | .... | 47 |

Class VI
Sub-Class 1
Number 1
“ Inflammation of Brain or its
Membranes ”

Classification : Bertillon System as first used ; 1907–1921.

| Year. | | | | Class 11 Rubric 61 (a) “ Cerebro-spinal Meningitis ” | | | Class 11 Rubric 61. “ Simple Meningitis ”. | | |
|-------|------|------|------|---|---------|--------|---|---------|--------|
| | | | | Male. | Female. | Total. | Male. | Female. | Total. |
| 1907 | .... | .... | .... | .... | .... | .... | 30 | 18 | 48 |
| 1908 | .... | .... | .... | .... | .... | .... | 22 | 12 | 34 |
| 1909 | .... | .... | .... | 2 | .... | 2 | 13 | 14 | 27 |
| 1910 | .... | .... | .... | 1 | 1 | 2 | 22 | 16 | 38 |
| 1911 | .... | .... | .... | .... | .... | .... | 25 | 14 | 39 |
| 1912 | .... | .... | .... | .... | .... | .... | 35 | 26 | 61 |
| 1913 | .... | .... | .... | .... | .... | .... | 36 | 14 | 50 |
| 1914 | .... | .... | .... | .... | .... | .... | 22 | 22 | 44 |
| 1915 | .... | .... | .... | 3 | 1 | 4 | 23 | 15 | 38 |
| 1916 | .... | .... | .... | 21 | 4 | 25 | 18 | 10 | 28 |
| 1917 | .... | .... | .... | 9 | 4 | 13 | 14 | 8 | 22 |
| 1918 | .... | .... | .... | 6 | .... | 6 | 7 | 8 | 15 |
| 1919 | .... | .... | .... | 4 | .... | 4 | 9 | 5 | 14 |
| 1920 | .... | .... | .... | 2 | .... | 2 | 16 | 11 | 27 |
| 1921 | .... | .... | .... | 1 | 1 | 2 | 16 | 8 | 24 |

Classification : Bertillon System Modified, 1922-1930.

| Year. | | | Class I. | | | Class III. | | | | | |
|-------|------|------|---|------|-------------|---|-------------|--------|---|----|--------|
| | | | Rubric 24 “ Epidemic Cerebro- spinal Meningitis.” | | | Rubric 71 (b) “ Non-Epidemic Cerebro- spinal-Meningitis.” | | | Rubric 71 (a) “ Simple Meningitis.” | | |
| | | | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. |
| 1922 | .... | .... |  |  | Not entered | 1 | .... | 1 | 11 | 8 | 19 |
| 1923 | .... | .... |  |  | Not entered | .... | 1 | 1 | 14 | 9 | 23 |
| 1924 | .... | .... |  |  | Not entered | 2 | .... | 2 | 15 | 7 | 22 |
| 1925 | .... | .... |  |  | Not entered | | Not entered | | 6 | 5 | 11 |
| 1926 | .... | .... |  |  | Not entered | | Not entered | | 10 | 8 | 18 |
| 1927 | .... | .... |  |  | Not entered | | Not entered | | 9 | 7 | 16 |
| 1928 | .... | .... | .... | 2 | 2 | 1 | .... | 1 | 5 | 5 | 10 |
| 1929 | .... | .... | 1 | .... | 1 | 2 | 1 | 3 | 8 | 4 | 12 |
| 1930 | .... | .... | .... | 1 | 1 | .... | .... | .... | 13 | 7 | 20 |

Classification : Bertillon System 2nd Modification, 1931-1933.

| Year. | | | Class I. | | | Class VI. | | | | | |
|-------|------|------|--|------|--------|---|------|--------|---|----|--------|
| | | | Rubric 18 “ Cerebro-spinal Fever.” | | | Rubric 79 (b) “ Non-Epidemic Cerebro- spinal Meningitis.” | | | Rubric 79 (a) “ Simple Meningitis.” | | |
| | | | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. |
| 1931 | .... | .... | 2 | 1 | 3 | 1 | .... | 1 | 11 | 4 | 15 |
| 1932 | .... | .... | .... | .... | .... | 1 | .... | 1 | 10 | 10 | 20 |
| 1933 | .... | .... | .... | .... | .... | 1 | .... | 1 | 8 | 7 | 15 |

Classification not stated but corresponds to Bertillon 2nd Modification., 1934-1939.

| Year. | | | Rubrics as above. | | | | | | | | |
|-------|------|------|-------------------|------|--------|------|------|--------|----|----|--------|
| | | | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. |
| 1934 | .... | .... | .... | .... | .... | 1 | 1 | 2 | 10 | 2 | 12 |
| 1935 | .... | .... | 1 | 2 | 3 | .... | .... | .... | 8 | 4 | 12 |
| 1936 | .... | .... | .... | .... | .... | 1 | .... | 1 | 9 | 1 | 10 |
| 1937 | .... | .... | 1 | .... | 1 | 1 | .... | 1 | 9 | 6 | 15 |
| 1938 | .... | .... | .... | .... | .... | .... | 3 | 3 | 10 | 6 | 16 |
| 1939 | .... | .... | 1 | .... | 1 | .... | .... | .... | 9 | 8 | 17 |

Classification Based on 1938 Revision of International List of Causes of Death, 1940-1949.

| Year. | | | | Class I.—(Infective and Parasitic Diseases.) | | | Class VI.—(Diseases of the Nervous System and Sense Organs.) | | | | | |
|-------|------|------|------|--|----|--------|--|------|--------|--------------------------------------|----|--------|
| | | | | Rubric 6 “ Cerebro-spinal Menin- gococcal Meningitis.” | | | Rubric 81 : Meningitis. “ Acute Cerebro-spinal Meningitis ” (b) (Non-epidemic). | | | Non-Meningococcal. “ Simple.” (a) | | |
| | | | | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. |
| 1940 | .... | .... | .... | 10 | 3 | 13 | .... | .... | .... | 10 | 9 | 19 |
| 1941 | .... | .... | .... | 42 | 28 | 70 | .... | .... | .... | 14 | 6 | 20 |
| 1942 | .... | .... | .... | 21 | 16 | 37 | .... | .... | .... | 8 | 5 | 13 |
| 1943 | .... | .... | .... | 11 | 5 | 16 | .... | .... | .... | 6 | 6 | 12 |
| 1944 | .... | .... | .... | 3 | 3 | 6 | .... | .... | .... | 8 | 6 | 14 |
| 1945 | .... | .... | .... | 3 | 1 | 4 | .... | 1 | 1 | 7 | 3 | 10 |
| 1946 | .... | .... | .... | 4 | 7 | 11 | .... | .... | .... | 11 | 7 | 18 |
| 1947 | .... | .... | .... | 3 | 2 | 5 | .... | .... | .... | 3 | 4 | 7 |
| 1948 | .... | .... | .... | 2 | 2 | 4 | .... | .... | .... | 5 | 2 | 7 |
| 1949 | .... | .... | .... | 3 | 1 | 4 | .... | .... | .... | 4 | 4 | 8 |

Classification based on 1948 Revision of International List of Causes of Deaths.

| Year. | | | | | | | | | | Class I.—Infective and Parasitic Diseases. Rubric 057. Meningococcal Infections. | | |
|-------|------|------|------|------|------|------|------|------|------|--|----|--------|
| | | | | | | | | | | M. | F. | Total. |
| | | | | | | | | | | | | |
| 1950 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 2 | 5 |
| 1951 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 1 | 3 |
| 1952 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 4 | 4 |
| 1953 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 3 | 6 |

Note.—Data kindly abstracted by Mr. J. F. Woolcott from the State Statistical Registers and other sources.

(B) NOTIFICATIONS : W.A. (1911-1954).

“ *Meningococcal Infection,*” “ *Cerebro-spinal Meningitis,*” “ *Cerebro-spinal Fever,*” *etc.*

| | | | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1911 | .... | .... | .... | .... | .... | .... | .... | 1933 | .... | .... | .... | .... | .... | .... | .... | 3 |
| 1912 | .... | .... | .... | .... | .... | .... | .... | 1934 | .... | .... | .... | .... | .... | .... | .... | 4 |
| 1913 | .... | .... | .... | .... | .... | .... | 3 | 1935 | .... | .... | .... | .... | .... | .... | .... | 4 |
| 1914 | .... | .... | .... | .... | .... | .... | 1 | 1936 | .... | .... | .... | .... | .... | .... | .... | 1 |
| 1915 | .... | .... | .... | .... | .... | .... | 8 | 1937 | .... | .... | .... | .... | .... | .... | .... | 5 |
| 1916 | .... | .... | .... | .... | .... | .... | 75 | 1938 | .... | .... | .... | .... | .... | .... | .... | .... |
| 1917 | .... | .... | .... | .... | .... | .... | 27 | 1939 | .... | .... | .... | .... | .... | .... | .... | .... |
| 1918 | .... | .... | .... | .... | .... | .... | 15 | 1940 | .... | .... | .... | .... | .... | .... | .... | 76 |
| 1919 | .... | .... | .... | .... | .... | .... | 4 | 1941 | .... | .... | .... | .... | .... | .... | .... | 587 |
| 1920 | .... | .... | .... | .... | .... | .... | 3 | 1942 | .... | .... | .... | .... | .... | .... | .... | 337 |
| 1921 | .... | .... | .... | .... | .... | .... | .... | 1943 | .... | .... | .... | .... | .... | .... | .... | 155 |
| 1922 | .... | .... | .... | .... | .... | .... | .... | 1944 | .... | .... | .... | .... | .... | .... | .... | 120 |
| 1923 | .... | .... | .... | .... | .... | .... | 3 | 1945 | .... | .... | .... | .... | .... | .... | .... | 29 |
| 1924 | .... | .... | .... | .... | .... | .... | 2 | 1946 | .... | .... | .... | .... | .... | .... | .... | 37 |
| 1925 | .... | .... | .... | .... | .... | .... | 2 | 1947 | .... | .... | .... | .... | .... | .... | .... | 30 |
| 1926 | .... | .... | .... | .... | .... | .... | .... | 1948 | .... | .... | .... | .... | .... | .... | .... | 16 |
| 1927 | .... | .... | .... | .... | .... | .... | 2 | 1949 | .... | .... | .... | .... | .... | .... | .... | 13 |
| 1928 | .... | .... | .... | .... | .... | .... | 1 | 1950 | .... | .... | .... | .... | .... | .... | .... | 24 |
| 1929 | .... | .... | .... | .... | .... | .... | 4 | 1951 | .... | .... | .... | .... | .... | .... | .... | 20 |
| 1930 | .... | .... | .... | .... | .... | .... | 2 | 1952 | .... | .... | .... | .... | .... | .... | .... | 35 |
| 1931 | .... | .... | .... | .... | .... | .... | 1 | 1953 | .... | .... | .... | .... | .... | .... | .... | 25 |
| 1932 | .... | .... | .... | .... | .... | .... | 5 | 1954 | .... | .... | .... | .... | .... | .... | .... | 48 |

(C) SEASONAL INCIDENCE, 1940-1954.

| Month. | | | | | | | 1940-1944. (Epidemic Prevalence.) | | 1945-1954. (Endemic Prevalence.) | |
|-----------|------|------|------|------|------|------|--------------------------------------|-------------|-------------------------------------|-------------|
| | | | | | | | Notns. | Percentage. | Notns. | Percentage. |
| January | .... | .... | .... | .... | .... | .... | 127 | 10.0 | 33 | 11.4 |
| February | .... | .... | .... | .... | .... | .... | 65 | 5.1 | 37 | 12.8 |
| March | .... | .... | .... | .... | .... | .... | 61 | 4.8 | 22 | 7.6 |
| April | .... | .... | .... | .... | .... | .... | 54 | 4.3 | 10 | 3.5 |
| May | .... | .... | .... | .... | .... | .... | 83 | 6.6 | 17 | 5.9 |
| June | .... | .... | .... | .... | .... | .... | 77 | 6.1 | 21 | 7.3 |
| July | .... | .... | .... | .... | .... | .... | 106 | 8.4 | 37 | 12.8 |
| August | .... | .... | .... | .... | .... | .... | 168 | 13.3 | 36 | 12.5 |
| September | .... | .... | .... | .... | .... | .... | 161 | 12.7 | 18 | 6.2 |
| October | .... | .... | .... | .... | .... | .... | 157 | 12.4 | 29 | 10.0 |
| November | .... | .... | .... | .... | .... | .... | 120 | 9.5 | 11 | 3.8 |
| December | .... | .... | .... | .... | .... | .... | 86 | 6.8 | 8 | 6.2 |
| Total | .... | .... | .... | .... | .... | .... | 1,265 | 100.0 | 289 | 100.0 |

It will be noted that both in periods of high and of low prevalence the colder months of the year (July to October, inclusive) produced the greater number of cases.

Appendix IX.

REPORT FROM DR. D. S. MACKENZIE OF THE V.D. SECTION.

To the Commissioner of Public Health.

In my report for 1955 I can only repeat, I am sorry to say, my remarks as given in my last report. We are doing a good job with the cases that we get, but not enough cases are being treated at the Clinic and very few by me personally.

There is still the same relative number of cases of the so-called "N S U" (non-specific urethritis). This condition should, in my opinion, be added to the list of venereal diseases. Its causative organism is somewhat obscure, possibly a "pneumonia-like organism," possibly a streptococcus. Whatever the causative organism, the mode of infection is by sexual intercourse. The condition is quite often concurrent with a positive gonorrhoea and my observations tend to show that its incubation period is from 12-14 days. In mixed infections the gonorrhoea clears up but the "N S U" is often difficult to clear. The broad spectrum antibiotics seem to give the best results.

As I pointed out in my last report, the "professional" is only a minor source of infection. At least 75 per cent. of the cases are from contacts with "pickups" in hotels, at dances, barbecues, and so-called "friends."

We have no means of getting at this great source of infection, and as I pointed out before, if the women do consult a medical man the examination is seldom checked by on-the-spot smearing and taking of culture swabs.

The figures given in the report of the notified cases of gonorrhoea are in my opinion quite misleading. I am convinced that the figures should be shown in thousands not hundreds.

The Clinic is still carrying on under adverse conditions. The approaches have been reduced to a rubble path by the building activities associated with the new buildings.

The co-operation with the Laboratory has been most helpful but I hope that even closer co-operation will soon come.

I feel very strongly about the V.D. question and trust that soon we may be able to make a public offensive against the "Enemy within our Gates."

The campaign may not be very spectacular but the results should save the great number of the younger age members of our community from present and future disease, leading to chronic genito-urinary conditions in men, sterility in women, and later syphilitic manifestation in both sexes.

Appendix X.

VENEREAL DISEASE IN WESTERN AUSTRALIA.
1954 – 1955.

| | Male. | | Female. | | Total. | |
|--|-------|-------|---------|-------|--------|-------|
| | 1954. | 1955. | 1954. | 1955. | 1954. | 1955. |
| Syphilis— | | | | | | |
| Primary | 2 | 3 | 1 | 2 | 3 | 5 |
| Secondary | 4 | .... | 5 | 1 | 9 | 1 |
| Tertiary | 5 | 5 | 2 | 3 | 7 | 8 |
| Congenital .... .... | .... | .... | 2 | .... | 2 | .... |
| Total, Syphilis | 11 | 8 | 10 | 6 | 21 | 14 |
| Gonorrhoea | 171 | 159 | 17 | 29 | 188 | 188 |
| Chancroid | 2 | .... | .... | .... | 2 | .... |
| Granuloma* .... .... | .... | .... | 1 | 1 | 1 | 1 |
| Total, All Venereal Diseases | 184 | 167 | 28 | 36 | 212 | 203 |

* Native.

Appendix XII.

ABSTRACT OF CONTRIBUTIONS TO THE LITERATURE BY AUTHORS ASSOCIATED WITH THE DEPARTMENT, 1955. (From the Library)

Davidson, W. S. " *Isoniazid Alone and Combined With Thiosemicarbazone*," Leprosy Review 26, 104-106. Author's Summary : "The present paper continues a previous examination and report on the use of INH alone and in combination with other anti-leprosy drugs.

There are indications that INH alone reaches its maximum usefulness between the sixth and ninth month of exhibition and thereafter cases fail to improve or deteriorate.

INH and Sulphatrone in a small series did not show good results.

INH and thiosemicarbazone (Neustab) in a series of 47 cases gave very promising results over a 10-month period.

INH plus thiosemicarbazone in full dosages may give rise to toxic manifestations. This treatment should therefore be given in an institution under medical supervision."

Kelsall, G. A. and Vos, G. H. " *The Foetal and Neonatal Wastage due to Sensitisation by the Rh Factor*," Medical Journal of Australia, *i*, 261-263. Authors' Summary : "Figures for miscarriages, stillbirths and neonatal deaths were obtained from a study of 260 immunised Rh-negative mothers who had a total of 1009 foetuses. They were compared with Rh-positive mothers of the same age, number of pregnancies and A.B.O. blood group, who had a total of 2018 foetuses, each Rh-negative woman being individually matched with two Rh-positive women in the above-mentioned respects.

Statistical analysis gave the following results :—

1. With the small number of cases available for analysis, immunization by the Rh factor does not lead to a significantly increased number of abortions.
2. On the other hand, immunization leads to a greatly increased number of stillbirths and the higher the antibody titre, as measured by a standardized indirect Coombs titration, the higher the percentage of stillbirths.
3. Haemolytic disease of the newborn has its greatest impact upon the foetus in the last trimester of pregnancy and upon the newborn infant. Expressed as survivals, the percentage of infants alive and well fourteen days after delivery in the affected series was 72·15, while 92·3 of the controls survived. The greatest losses occasioned by the disease occurred as stillbirths but this is probably influenced by the fact that many of the newborn babies were treated, and possibly survived, as a result of exchange transfusion. Many potential stillbirths may have been avoided by premature induction of labour.
4. The figures indicate a highly significant positive correlation between the indirect Coombs titration of maternal antibodies and the combined stillbirths and neonatal mortality rates."

Kelsall, G. A. and Vos, G. H. " *Premature Induction of Labour in the Treatment of Haemolytic Disease of the Newborn*," Lancet, *ii*, 161-164. Authors' Summary : "We have sought to show that in haemolytic diseases of the newborn the over-all mortality rate can be lowered by the premature induction of labour at the optimal time after 35 weeks gestation, followed, where necessary, by exchange transfusion.

Of importance is the avoidance of citrated blood for exchange transfusion, a large volume (1 litre) of freshly collected warm heparinised blood being substituted.

The mortality-rate for spontaneously delivered infants (23·4 per cent.) is compared with that of infants born after premature induction (10·7 per cent.) at the time indicated by consideration of the antenatal antibody titre of the mother's serum. Statistically these figures indicate a significant preference for controlled induction.

Controlled induction of labour and subsequent treatment have virtually eliminated stillbirths after 35 weeks gestation and have not been associated with an undue increase in neonatal deaths."

Mann, Ida " *Ophthalmic Impressions of a Leprosarium*," Leprosy Review, 36, 10-14.

On the whole the ocular picture in this leprosarium (Derby) is a cheerful one. No one is blind from leprosy alone and ocular leprosy is not common in any case. The new drug treatments appear to prevent any serious ocular complications.

The cases of trachoma far outnumbered the cases of ocular leprosy and a fact of great interest and importance was that no cases of active trachoma were found. The chemotherapy (Sulphetrone and D.A.D.P.S.) used in the treatment of leprosy had entirely killed the trachoma virus and had cured any secondary septic infection.

Snow, D. J. R. " *Crowds and Poliomyelitis : With Special reference to a Recent Epidemic in Western Australia*," Medical Journal of Australia, *i*, 2-5. Author's Summary : "The influence of crowds on the spread of poliomyelitis is discussed. The Royal visit to Western Australia is described in terms of the very large crowds which assembled repeatedly over a period of six days. An epidemic of poliomyelitis was in progress at the time, but the visit was not followed by any increase in the number of cases notified. This observation suggests that the spread of poliomyelitis is attributable to the transference of infected faecal particles rather than to the droplet mechanism, and that the control measures, which were based largely on hand hygiene, were justified."

Snow, D. J. R. ; Raad, G. R. A. ; Woolcott, J. F. ; Miles, J. A. R. ; Ames, P. G. and Stokes, L. Joan " *Immunity to Poliomyelitis : An Investigation among School Children at Como in Western Australia*," Medical Journal of Australia, *ii*, 485-487. Authors' Summary : "A serological investigation undertaken during the course of a type 1 poliomyelitis epidemic in Perth disclosed that 46 per cent. of children at one school had high antibody levels to type 1 virus, but two subsequent examinations carried out during the ensuing five months revealed little change in this proportion. It is therefore concluded that immunizing infections did not take place during the course of the investigation in the group of children tested."

Appendix XIII.

INFANT HEALTH REPORT, 1955.

During 1955, a total of 24,544 individual babies attended Infant Health Centres throughout the State. Live births for the year were 16,623. Gross attendances for the year were 193,677 babies.

In Australia, Infant Mortality Figures for 1955 were as follows :—

| | | | |
|-------------------|------|------|-------|
| New South Wales | .... | .... | 24·86 |
| Tasmania | .... | .... | 23·37 |
| South Australia | .... | .... | 23·20 |
| Western Australia | .... | .... | 22·44 |
| Queensland | .... | .... | 20·28 |
| Victoria | .... | .... | 18·37 |

By the end of 1954, we had 57 triple-certificated Sisters on our Staff and the following Infant Health Centres :—

| | Main Centres. | Sub-Centres. |
|--|---------------|--------------|
| Metropolitan | 28 | 112 |
| Country | 24 | 220 |
| Total number of Centres for whole State—384. | | |

New Infant Health Centre Buildings were opened at :—

| | |
|-------------------------------------|-------------|
| Kellerberrin (Centre with Quarters) | Tuart Hill |
| Melville | North Beach |
| Miling | Boyanup |
| Moora (Centre with Quarters) | Bruce Rock |
| Northampton | Mullewa |
| Rivervale | |

Home Visits.—21,968 home visits were made throughout the State by our Sisters, and 388 letters of advice were written by them. Advice by telephone amounted to 4,021 calls.

Correspondence Section.

Sister M. Philbin was appointed Correspondence Sister in July, 1955. The figures in this section for the year were as follows :—

| | |
|-------------------------------|-------|
| Births reported | 626 |
| New Babies (from other areas) | 284 |
| Individual Babies | 607 |
| Pre-School Consultations | 9 |
| Letters Received— | |
| Mothers | 883 |
| Others | 49 |
| Letters Sent— | |
| Mothers | 1,269 |
| Others | 83 |
| Letters to Expectant Mothers | 14 |
| Visits to Centre— | |
| Babies | 89 |
| Pre-School | 9 |
| Expectant Mothers | 4 |
| Telephone Calls (Inward) | 108 |

During 1954 Sister flew to the Murchison, North-West and Kimberleys at regular intervals and visited the following places :—

| | | | |
|---------|-------------|-----------|-------------|
| Wyndham | Pt. Hedland | Carnarvon | Meekatharra |
| Derby | Roebourne | Wiluna | Cue |
| Broome | Onslow | Leonora | Mt. Magnet |

While in the North, Sister did the Station Run with the Flying Doctor, calling in at :—

| | | | |
|------------------|-----------------|---------------|-----------------|
| Ellendale | Gogo | Gordon Downs | Tableland |
| Nookanbah | Christmas Creek | Nicholson | Glen Roy |
| Jubilee Downs | Margaret River | Ord River | Mt. House |
| Cherrabun | Hall's Creek | Turkey Creek | Napier Downs |
| Fossil Downs | Billiluna | Turner River | Kimberley Downs |
| Fitzroy Crossing | Balgo Hills | Bedford Downs | Mt. Hart |

Because of the fact that each year new Centres are opened and take in more territory (*e.g.*, Trans-Australia survey) the actual correspondence section must necessarily grow smaller. However, Sister Philbin has plans well in hand to extend her work in 1956 by teaching white and native girls in the North mothercraft by correspondence, and by teaching illiterate native mothers, living in camps and reserves, mothercraft by means of films and lectures. In this way, the benefit of modern methods will be brought to mothers not previously reached by the Correspondence Scheme and the potential mothers will also benefit.

Mothercraft Section.

For the first half of 1955, we were working with one Mothercraft Lecturer instead of two, as Sister Ashton was in Melbourne, doing her Pre-School Course. When, in June, she returned and was appointed Pre-School Sister, Sister D. Kerr joined Sister H. Craig as the second Mothercraft Lecturer.

During 1955, 1,563 pupils were given Mothercraft Lectures. These lectures were given at :—

| | |
|--------------------------------|-------------------------------------|
| Central Training School. | Perth Modern School |
| West Perth (Expectant Parents) | 7 State High Schools (Metropolitan) |
| Alexandra Home | 7 Private Schools |
| Kindergarten Training College | 15 State High Schools (Country) |
| Perth Technical College | 4 Private Schools (Country). |

St. John's Nursing and First Aid Lectures were also given in the City at the request of one of the private schools.

Broadcasts were given weekly throughout the year from Stations 6 A.M. /P.M. and also from Kalgoorlie and Geraldton.

Trans-Australia Railway.—Four trips at three-monthly intervals were carried out in the new Child Health Car, provided by the Commonwealth Railways and attached to the “Tea and Sugar Train.” On one of these trips, Sister was accompanied by a Doctor. The numbers seen in 1955 were as follows :—

| | W.A. | S.A. | Total. |
|------------------------|------|------|--------|
| Babies | 68 | 45 | 113 |
| Toddlers | 73 | 48 | 121 |
| Pre-school | 177 | 105 | 282 |
| School Chidren | 153 | 50 | 203 |
| Expectant Mothers | 14 | 11 | 25 |
| Adults | 23 | 19 | 42 |

Displays.

During “Education Week” the Mothercraft Lecturers arranged mothercraft demonstrations in David Jones, when school-girls demonstrated what they had learnt at their lectures.

Pre-School Section.

Sister P. Ashton was appointed Pre-School Sister in June, 1955, and began holding Pre-School Clinics at our Centres, so that children from 2–5 years of age could be seen and examined at regular intervals.

It is felt that this work will grow enormously and that specially trained Staff would be needed to cope with the volume of work. In November, 1955, a special one-year course (part-time) in Pre-School Training was begun and ten of our Sisters commenced this course. At its completion, these Sisters will be competent to conduct their own Pre-School Clinics, in conjunction with their Clinics for Infants. It is proposed to train a number of our Staff each year, so that ultimately every Infant Health Sister will be qualified in the nursing aspects of preventive medicine as applied to the Pre-School child. The children of this State will then be supervised from birth until they leave school. Between July and December, 1955, Sister Ashton saw the following children :—

| | | | | |
|----------------|------|------|------|-----|
| Aged 1–2 years | .... | .... | .... | 75 |
| Aged 2–3 years | .... | .... | .... | 207 |
| Aged 3–4 years | .... | .... | .... | 151 |
| Aged 4–5 years | .... | .... | .... | 92 |
| Aged 5–6 years | .... | .... | .... | 44 |
| Total | | | | 569 |

These children were seen at the following places :—

| | | | |
|------------|-----------------|-----------------|---------------|
| Perth | Nedlands | East Cannington | South Perth |
| Bayswater | Hollywood | Wembley | Gosnells |
| West Perth | Mt. Hawthorn | Bicton | Melville |
| Mosman | North Perth | Fremantle | Victoria Park |
| Belmay | North Cottesloe | Kensington | Scarborough |
| Cottesloe | Inglewood | Como | |

By the end of 1957, when many more of our Sisters will have completed the Pre-School Course, we hope to have special Pre-School Clinics at every suburban Infant Health Centre.

Percentage of Children Attending Infant Health Clinics.

In the past various estimates have been made regarding the proportion of children in the State that attends an Infant Health Clinic at some time or other. This estimate cannot be made with any great degree of accuracy from gross figures of births and attendances. An estimate based on data in Table 1 suggests that about 70 per cent. of all infants attend a clinic. This figure was checked by asking all Infant Health Sisters to record attendances by name against birth lists for their districts. This method revealed that in the Metropolitan area at least 72 per cent. and in the country 70 per cent. of all infants attend a clinic at some time or other.

Heights and Weights.

For statistical purposes Heights and Weights were recorded and collected over a limited period, and are given in the table below.

HEIGHT AND WEIGHT OF INFANTS FROM BIRTH TO 16 WEEKS.

| — | | | | | | | No. Examined. | Average Height. | Average Weight. | |
|-------------|--|--|--|--|--|--|---------------|-----------------|-----------------|-----|
| | | | | | | | | in. | lb. | oz. |
| At Birth— | | | | | | | | | | |
| Male | | | | | | | 539 | 20 | 7 | 10½ |
| Female | | | | | | | 458 | 20 | 7 | 8 |
| 2 Weeks— | | | | | | | | | | |
| Male | | | | | | | 224 | 20½ | 8 | 0½ |
| Female | | | | | | | 220 | 20½ | 7 | 8 |
| 4 Weeks— | | | | | | | | | | |
| Male | | | | | | | 147 | 21 | 8 | 13 |
| Female | | | | | | | 133 | 21 | 8 | 11 |
| 6 Weeks— | | | | | | | | | | |
| Male | | | | | | | 63 | 22 | 10 | 2½ |
| Female | | | | | | | 65 | 21½ | 9 | 5½ |
| 8 Weeks— | | | | | | | | | | |
| Male | | | | | | | 64 | 22 | 10 | 9½ |
| Female | | | | | | | 61 | 22 | 10 | 6 |
| 12 Weeks— | | | | | | | | | | |
| Male | | | | | | | 62 | 23¾ | 12 | 15¼ |
| Female | | | | | | | 65 | 23½ | 11 | 15 |
| 16 Weeks— | | | | | | | | | | |
| Male | | | | | | | 55 | 24¼ | 13 | 11¼ |
| Female | | | | | | | 52 | 24¼ | 13 | 6½ |

ANNUAL SUMMARY, JANUARY – DECEMBER, 1955.

| Centres. | Gross Number of Attendances. | | | | | Individual Babies Attended. | | | | | Birth Noti- fications Received. | New Babies. | Transfers from other Centres. | Visiting Babies. | Individual Expectant Mothers. | |
|------------------------------|------------------------------|----------------------|------------------------|-------------------------|---------------------------------|-----------------------------|----------------------|------------------------|-------------------------|----------------------------------|---------------------------------------|----------------|-------------------------------------|---------------------|-------------------------------------|--|
| | Under 12 months. (1) | 1-2 years. (2) | Total 1 + 2. (3) | Over 2 years. (4) | Grand Total 3 + 4. (5) | Under 12 months. (6) | 1-2 years. (7) | Total 6 + 7. (8) | Over 2 years. (9) | Grand Total 8 + 9. (10) | | | | | | |
| | | | | | | | | | | | | | | | | |
| Country— | | | | | | | | | | | | | | | | |
| Albany | 3,902 | 270 | 4,172 | 121 | 4,293 | 442 | 109 | 551 | 83 | 634 | 445 | 297 | 11 | 80 | 13 | |
| Beverley | 1,605 | 84 | 1,689 | 121 | 1,810 | 214 | 53 | 267 | 89 | 356 | 130 | 172 | 16 | 12 | 15 | |
| Boulder | 2,321 | 141 | 2,462 | 74 | 2,536 | 173 | 40 | 213 | 29 | 242 | 207 | 149 | 5 | 47 | 12 | |
| Bridgetown | 2,764 | 212 | 2,976 | 54 | 3,030 | 302 | 57 | 359 | 13 | 372 | 243 | 197 | 14 | 26 | 7 | |
| Bunbury | 4,037 | 361 | 4,398 | 168 | 4,566 | 369 | 50 | 419 | 34 | 453 | 263 | 193 | 19 | 70 | 2 | |
| Busselton | 4,138 | 267 | 4,405 | 67 | 4,472 | 367 | 122 | 489 | 46 | 535 | 265 | 234 | 17 | 109 | .... |  |
| Carnarvon | 226 | 32 | 258 | 37 | 295 | 78 | 14 | 92 | 20 | 112 | 110 | 62 | 9 | 4 | 5 | |
| Collie | 2,247 | 193 | 2,440 | 121 | 2,561 | 290 | 15 | 305 | 6 | 311 | 287 | 202 | 8 | 19 | 32 | |
| Corrigin | 2,526 | 301 | 2,827 | 360 | 3,187 | 281 | 94 | 375 | 135 | 510 | 233 | 208 | 14 | 74 | 43 | |
| Esperance | 190 | 6 | 196 | 6 | 202 | 22 | 4 | 26 | 2 | 28 | 15 | 19 | 1 | 22 | 4 | |
| Geraldton | 2,559 | 38 | 2,597 | .... | 2,597 | 296 | 15 | 311 | .... | 311 | .... | 280 | 12 | 13 | 2 | |
| Harvey | 2,654 | 138 | 2,792 | 57 | 2,849 | 300 | 82 | 382 | 21 | 403 | 205 | 174 | 26 | 32 | 5 | |
| Kalgoorlie | 4,404 | 308 | 4,712 | 223 | 4,935 | 270 | 235 | 505 | 124 | 629 | 384 | 311 | 13 | 60 | .... |  |
| Katanning | 2,964 | 235 | 3,199 | 112 | 3,311 | 300 | 122 | 422 | 27 | 449 | 293 | 246 | 6 | 40 | 10 | |
| Kellerberrin | 3,872 | 237 | 4,109 | 75 | 4,184 | 385 | 113 | 498 | 52 | 550 | 261 | 224 | 26 | 31 | 4 | |
| Manjimup | 3,207 | 215 | 3,422 | 110 | 3,532 | 278 | 42 | 320 | 66 | 386 | 290 | 288 | 18 | 36 | 23 | |
| Moora | 2,908 | 301 | 3,209 | 177 | 3,386 | 229 | 167 | 396 | 93 | 489 | 223 | 206 | 17 | 42 | 18 | |
| Mundaring | 3,839 | 302 | 4,141 | 122 | 4,263 | 234 | 96 | 330 | 36 | 366 | 199 | 179 | 4 | 39 | 59 | |
| Northam | 773 | 58 | 831 | 30 | 861 | 146 | 36 | 182 | 18 | 200 | 95 | 139 | 7 | 12 | .... |  |
| Narrogin | 2,816 | 231 | 3,047 | 86 | 3,133 | 377 | 113 | 490 | 48 | 538 | 341 | 218 | 21 | 12 | .... |  |
| Pinjarra | 1,906 | 71 | 1,977 | .... | 1,977 | 110 | 66 | 176 | 8 | 184 | 179 | 120 | 10 | 66 | .... |  |
| Three Springs | 3,622 | 579 | 4,201 | 260 | 4,461 | 214 | 121 | 335 | 138 | 473 | 246 | 240 | 24 | 23 | 33 | |
| Wagln | 2,597 | 272 | 2,869 | 56 | 2,925 | 278 | 68 | 346 | 16 | 362 | 202 | 148 | 28 | 45 | .... |  |
| Wyalkatchem | 2,491 | 196 | 2,687 | 98 | 2,785 | 322 | 95 | 417 | 91 | 508 | 238 | 213 | 14 | 18 | 96 | |
| Metropolitan— | | | | | | | | | | | | | | | | |
| Applecross | 5,028 | 355 | 5,383 | 270 | 5,653 | 505 | 157 | 662 | 149 | 811 | 262 | 267 | 54 | 176 | 31 | |
| Armadale | 3,798 | 212 | 4,010 | 117 | 4,127 | 264 | 29 | 293 | 4 | 297 | 267 | 231 | 12 | 57 | 44 | |
| Bayswater | 5,743 | 337 | 6,080 | 227 | 6,307 | 575 | 171 | 746 | 153 | 899 | 418 | 333 | 29 | 20 | .... |  |
| Belmont | 2,455 | 29 | 2,484 | 9 | 2,493 | 500 | 2 | 502 | 1 | 503 | 245 | 182 | 19 | 16 | 3 | |
| Bieton | 5,462 | 167 | 5,629 | .... | 5,629 | 431 | 95 | 526 | .... | 526 | 418 | 349 | 48 | 33 | .... |  |
| Caravan No. 1 | 3,671 | 609 | 4,280 | 439 | 4,719 | 196 | 152 | 348 | 113 | 461 | 289 | 263 | 56 | 36 | 73 | |
| Claremont | 2,549 | 153 | 2,702 | 449 | 3,151 | 340 | 42 | 382 | 134 | 516 | 262 | 205 | 8 | 18 | 6 | |
| Cottesloe | 4,989 | 455 | 5,444 | 195 | 5,639 | 432 | 165 | 597 | 88 | 685 | 280 | 254 | 26 | 109 | 1 | |
| East Fremantle | 4,117 | 258 | 4,375 | 436 | 4,811 | 447 | 97 | 544 | 73 | 617 | 302 | 229 | 34 | 26 | 24 | |
| Fremantle | 4,259 | 206 | 4,465 | 316 | 4,781 | 526 | 73 | 599 | 98 | 697 | 285 | 340 | 40 | 146 | .... |  |
| Gosnells | 2,971 | 1,311 | 4,282 | 82 | 4,364 | 294 | 190 | 484 | 54 | 538 | .... | .... | .... | .... | .... |  |
| Inglewood | 5,034 | 485 | 5,519 | 63 | 5,582 | 492 | 97 | 589 | 27 | 616 | 345 | 330 | 29 | 46 | 26 | |
| Kalamunda | 1,593 | 122 | 1,715 | 15 | 1,730 | 207 | 48 | 255 | 9 | 264 | 255 | 170 | 20 | 11 | 2 | |
| Kensington | 2,524 | 60 | 2,584 | 41 | 2,625 | 357 | 15 | 372 | 16 | 388 | 95 | 91 | 21 | .... | .... |  |
| Leederville | 5,110 | 134 | 5,244 | 84 | 5,328 | 329 | 70 | 399 | 30 | 429 | 347 | 345 | 56 | 37 | 18 | |
| Maylands | 4,178 | 150 | 4,328 | 3 | 4,331 | 270 | 150 | 420 | 6 | 426 | 248 | 270 | 55 | 97 | 9 | |
| Midland Junction | 5,210 | 428 | 5,638 | 20 | 5,658 | 518 | 116 | 634 | 3 | 637 | 491 | 404 | 29 | 31 | 1 | |
| Nedlands | 3,462 | 157 | 3,619 | 101 | 3,720 | 293 | 51 | 344 | 35 | 379 | 109 | 179 | 4 | 6 | 4 | |
| North Perth | 4,739 | 242 | 4,981 | 192 | 5,173 | 450 | 114 | 564 | 135 | 699 | 412 | 370 | 43 | 57 | 12 | |
| Osborne Park | 3,930 | 188 | 4,118 | 12 | 4,130 | 361 | 62 | 423 | 4 | 427 | 310 | 236 | 76 | 53 | .... |  |
| Perth | 5,011 | 232 | 5,243 | 126 | 5,369 | 542 | 210 | 752 | 116 | 868 | 531 | 419 | 74 | 267 | 73 | |
| Rockingham | 1,314 | 64 | 1,378 | .... | 1,378 | 161 | 80 | 241 | 9 | 250 | 77 | 86 | 14 | 10 | 14 | |
| East Scarborough | 2,481 | 86 | 2,567 | 31 | 2,598 | 363 | 135 | 498 | 1 | 499 | 215 | 166 | 23 | 13 | 16 | |
| South Perth | 4,285 | 204 | 4,489 | 123 | 4,612 | 325 | 112 | 437 | 30 | 467 | 200 | 257 | 55 | 70 | 1 | |
| Subiaco | 3,784 | 223 | 4,007 | 217 | 4,224 | 352 | 198 | 550 | 191 | 741 | 430 | 266 | 45 | 73 | 20 | |
| Victoria Park | 4,745 | 47 | 4,792 | 10 | 4,802 | 510 | 47 | 557 | 10 | 567 | 337 | 480 | 58 | 131 | 10 | |
| Wembley | 4,938 | 272 | 5,210 | 128 | 5,338 | 353 | 90 | 443 | 51 | 494 | 317 | 283 | 32 | 59 | 23 | |
| West Perth | 943 | 30 | 973 | 12 | 985 | 138 | 20 | 158 | 15 | 173 | 73 | 76 | 7 | 46 | 3 | |
| Scarborough | 2,180 | 71 | 2,251 | 18 | 2,269 | 212 | 44 | 256 | 13 | 269 | 215 | 153 | 13 | 2 | 7 | |
| Total | 175,071 | 12,335 | 187,406 | 6,271 | 193,677 | 17,020 | 4,761 | 21,781 | 2,763 | 24,544 | 13,389 | 11,953 | 1,330 | 2,533 | 813 | |
| Previous Annual Total (1954) | 175,780 | 12,457 | 188,237 | 6,743 | 194,980 | 16,074 | 4,247 | 20,321 | 2,711 | 23,032 | 13,702 | 11,837 | 1,602 | 2,974 | 732 | |

| Centres. | Medical Visits. | | | | | | | | | | Advice by Letter. (28) | Advice by Tele- phone. (29) | Mothers' Referred Corres- pondence Sister. (30) | Lectures given. (31) | Group Demon- strations. (32) | Deaths. (33) | | | |
|------------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|---|--|------------------------------------|---------------------------|---------------------------|---------------------------------|---------------------------|-----------------------------------|---|----------------------------|---------------------------------------|-----------------|-----|-----|-----|
| | Doctor. | | Hospital. | | Hospital (Number of Babies). (22) | Home. | | | Total 23 — 26. (27) | | | | | | | | | | |
| | Baby Referred. (16) | Mother Referred. (17) | Baby Referred. (18) | Mother Referred. (19) | | To Babies, Sub- sequent. (24) | Expect- ant Mothers. (25) | In- effective. (26) | | | | | | | | | | | |
| | | | | | | | | | | To Babies, First. (23) | | | | | | | | | |
| Country— | | | | | | | | | | | | | | | | | | | |
| Albany ... | 96 | 12 | ... | ... | 374 | 96 | 12 | 50 | 54 | 1 | 5 | 110 | 23 | 163 | 4 | 4 | 15 | 14 | 4 |
| Beverley ... | 28 | 7 | ... | ... | 118 | 28 | 7 | 34 | 6 | 3 | ... | 43 | 4 | 45 | 4 | 4 | 18 | 9 | 2 |
| Boulder ... | 35 | ... | ... | ... | 91 | 35 | ... | 142 | 35 | 3 | 31 | 211 | 1 | 54 | ... | ... | 14 | ... | ... |
| Bridgetown ... | 16 | 3 | ... | ... | 223 | 19 | 3 | 31 | 179 | 2 | 1 | 213 | ... | 44 | ... | ... | 8 | ... | ... |
| Bunbury ... | 35 | 3 | ... | 1 | 405 | 35 | 4 | 236 | 64 | ... | 218 | 518 | ... | 81 | ... | ... | 1 | ... | 1 |
| Busselton ... | 21 | 1 | ... | ... | 220 | 21 | 1 | 34 | ... | ... | 3 | 37 | ... | 31 | ... | ... | 13 | ... | ... |
| Carnarvon ... | ... | ... | ... | ... | 10 | ... | ... | 60 | 12 | ... | 17 | 92 | 1 | 4 | ... | ... | 2 | ... | ... |
| Collie ... | 52 | 11 | ... | 11 | 384 | 54 | 13 | 323 | 256 | 28 | ... | 607 | 120 | 7 | ... | ... | ... | ... | ... |
| Corrigin ... | 83 | 5 | ... | ... | 328 | 83 | 5 | 79 | 247 | ... | 10 | 336 | 2 | 83 | ... | ... | ... | ... | ... |
| Esperance ... | 1 | ... | ... | ... | 16 | 1 | ... | 12 | 3 | 4 | ... | 19 | ... | ... | ... | ... | ... | ... | ... |
| Geraldton ... | 16 | 2 | ... | ... | 218 | 16 | ... | 38 | 69 | ... | ... | 108 | ... | ... | ... | 4 | ... | 10 | 2 |
| Harvey ... | 15 | 1 | ... | ... | 158 | 15 | 1 | 8 | 32 | ... | ... | 40 | ... | ... | ... | ... | ... | ... | ... |
| Kalgoorlie ... | 104 | 27 | ... | ... | 501 | 104 | 27 | 205 | 2 | ... | 6 | 213 | ... | 343 | ... | ... | 33 | 15 | ... |
| Katanning ... | 25 | 3 | ... | ... | 304 | 25 | 3 | 13 | 48 | 1 | 4 | 66 | 15 | 60 | ... | ... | 9 | ... | 4 |
| Kellerberrin ... | 8 | ... | ... | ... | 443 | 8 | ... | 32 | 374 | ... | 9 | 415 | 5 | 23 | ... | ... | ... | ... | ... |
| Manjimup ... | 43 | ... | ... | ... | 276 | 43 | ... | 22 | ... | ... | ... | 22 | 13 | 69 | ... | ... | ... | ... | ... |
| Moora ... | 67 | 17 | ... | ... | 243 | 67 | 17 | 35 | 88 | 3 | 9 | 135 | ... | 2 | ... | 127 | ... | 1 | ... |
| Mundaring ... | 57 | 15 | ... | ... | ... | 57 | 15 | 163 | 1,294 | ... | 19 | 1,476 | ... | 21 | ... | ... | ... | ... | ... |
| Northam ... | 16 | 2 | ... | ... | 103 | 16 | 2 | 87 | 72 | 1 | 24 | 184 | ... | 23 | ... | ... | ... | ... | ... |
| Narrogin ... | 55 | 3 | ... | ... | 245 | 55 | 3 | 56 | 9 | ... | 9 | 74 | ... | 57 | ... | 3 | ... | 2 | ... |
| Pinjarra ... | 24 | ... | ... | ... | 117 | 24 | ... | 107 | 8 | ... | ... | 115 | ... | 1 | ... | ... | ... | ... | 1 |
| Three Springs ... | 66 | 21 | ... | ... | 212 | 66 | 21 | 26 | 59 | 1 | ... | 86 | 16 | 199 | ... | ... | ... | ... | ... |
| Wagin ... | 75 | 24 | ... | ... | 165 | 75 | 24 | 31 | 151 | 11 | 22 | 215 | 12 | 66 | ... | 9 | ... | 5 | 1 |
| Wyalkatchem ... | 44 | 15 | ... | 1 | 168 | 45 | 16 | 127 | 77 | 12 | 3 | 219 | 4 | 23 | ... | ... | ... | ... | ... |
| Metropolitan— | | | | | | | | | | | | | | | | | | | |
| Applecross ... | 12 | ... | 1 | ... | ... | 13 | ... | 241 | 228 | 1 | ... | 470 | ... | 161 | ... | ... | ... | ... | ... |
| Arncliffe ... | 54 | 12 | 2 | ... | 187 | 56 | 12 | 127 | 1,423 | 68 | 3 | 1,621 | ... | ... | ... | 3 | ... | ... | ... |
| Bayswater ... | ... | ... | ... | ... | ... | ... | ... | 367 | 452 | 5 | 83 | 907 | ... | ... | ... | ... | ... | ... | ... |
| Belmont ... | 7 | ... | ... | ... | ... | 7 | ... | 243 | 28 | ... | 2 | 273 | ... | ... | ... | ... | ... | ... | 2 |
| Bicton ... | 77 | 13 | ... | ... | ... | 77 | 13 | 353 | 158 | ... | ... | 511 | ... | ... | ... | ... | ... | ... | ... |
| Caravan No. 1 ... | 177 | 41 | ... | ... | ... | 177 | 41 | 157 | 91 | 17 | 44 | 309 | 121 | 8 | ... | ... | ... | ... | ... |
| Claremont ... | 8 | ... | ... | ... | ... | 8 | ... | 266 | 953 | ... | ... | 1,219 | ... | ... | ... | ... | ... | ... | ... |
| Cottesloe ... | 16 | 2 | ... | ... | ... | 16 | 2 | 218 | 185 | ... | 30 | 433 | ... | 253 | ... | ... | ... | ... | ... |
| East Fremantle ... | 103 | 7 | ... | ... | 127 | 103 | 7 | 278 | 288 | ... | ... | 566 | ... | ... | ... | ... | ... | ... | ... |
| Fremantle ... | 60 | 5 | ... | ... | 48 | 60 | 5 | 250 | 569 | ... | 29 | 848 | ... | 174 | ... | ... | ... | 246 | ... |
| Gosnells ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Inglewood ... | 69 | 13 | ... | ... | ... | 69 | 13 | 280 | ... | ... | 15 | ... | ... | ... | ... | ... | 1 | ... | ... |
| Kalamunda ... | 32 | 12 | ... | ... | ... | 12 | 39 | 156 | 1,506 | 3 | 69 | 1,734 | 7 | 112 | ... | ... | 1 | ... | ... |
| Kensington ... | 14 | 2 | ... | ... | ... | 14 | 2 | 93 | 44 | ... | 11 | 148 | ... | ... | ... | ... | ... | ... | ... |
| Leederville ... | 38 | 8 | ... | ... | ... | 38 | 8 | 329 | 153 | 3 | 87 | 572 | ... | ... | ... | ... | ... | ... | ... |
| Maylands ... | 63 | 6 | ... | ... | 1,107 | 63 | 6 | 254 | 144 | 4 | 45 | 447 | ... | ... | ... | ... | ... | ... | ... |
| Midland Junction ... | 21 | ... | ... | ... | 598 | 21 | ... | 269 | 8 | ... | 54 | 331 | 3 | 67 | ... | 1 | ... | ... | ... |
| Nedlands ... | 31 | 3 | ... | ... | ... | 31 | 3 | 73 | 253 | ... | ... | 326 | 4 | ... | ... | ... | ... | ... | ... |
| North Perth ... | 42 | 10 | ... | ... | ... | 43 | 10 | 331 | 388 | 5 | 94 | 818 | ... | 44 | ... | ... | ... | ... | ... |
| Osborne Park ... | 20 | 6 | ... | ... | ... | 20 | 6 | 303 | 244 | ... | 56 | 603 | 1 | ... | ... | ... | ... | ... | ... |
| Perth ... | 108 | 41 | ... | ... | ... | 108 | 43 | 546 | 194 | ... | 148 | 888 | ... | ... | ... | ... | ... | ... | ... |
| Rockingham ... | 16 | ... | ... | ... | ... | 16 | ... | 122 | 119 | 3 | 27 | 257 | ... | ... | ... | ... | ... | ... | ... |
| East Scarborough ... | 23 | 2 | ... | ... | ... | 23 | 2 | 194 | 54 | 2 | 4 | 277 | ... | ... | ... | ... | ... | ... | ... |
| South Perth ... | 44 | ... | ... | ... | ... | 47 | ... | 260 | 170 | 11 | ... | 434 | ... | ... | ... | ... | ... | ... | ... |
| Subiaco ... | 80 | 4 | ... | ... | ... | 81 | 4 | 218 | 434 | ... | 10 | 663 | ... | ... | ... | ... | ... | ... | ... |
| Victoria Park ... | 54 | 5 | ... | ... | ... | 54 | 5 | 503 | 16 | ... | 18 | 529 | ... | ... | ... | ... | ... | ... | ... |
| Wembley ... | 26 | ... | ... | ... | ... | 27 | ... | 328 | 175 | ... | ... | 521 | ... | ... | ... | ... | ... | ... | ... |
| West Perth ... | 7 | 6 | ... | ... | ... | 7 | 6 | 25 | 6 | ... | ... | 49 | ... | ... | ... | ... | ... | ... | ... |
| Scarborough ... | 21 | 3 | ... | ... | ... | 21 | 3 | 238 | 106 | 3 | 6 | 353 | ... | ... | ... | ... | ... | ... | ... |
| Total | 2,205 | 373 | 24 | 3 | 7,445 | 2,229 | 386 | 8,974 | 11,540 | 198 | 1,256 | 21,968 | 388 | 4,021 | 167 | 174 | 296 | 19 | 27 |
| Previous Annual Total (1954) | 2,255 | 409 | 34 | 7 | 6,308 | 2,289 | 416 | 7,881 | 10,053 | 192 | 798 | 18,924 | 188 | 3,540 | 102 | 142 | 49 | | |

Appendix XIV.

REPORT ON THE SCHOOL MEDICAL SERVICE, 1955.

During 1955 the staff consisted of four Medical Officers and nine Nursing Sisters. The immediate administrative control was under Dr. E. M. Stang until her retirement in July, 1955. An extra Nursing Sister was employed for the second half of the year, bringing the total up to 10.

The field covered by this staff includes all State schools, Roman Catholic schools, Seventh Day Adventist schools, kindergartens, and Native Missions.

The number of children of school age again increased considerably during the year. The number covered by the School Medical Service is now approximately 120,000, which excludes colleges and private schools.

To examine each child every two years means that 60,000 have to be examined each year plus special re-examinations. One doctor and his nursing staff can do at the most 9,000 children a year. On that basis we would require seven doctors to maintain a two-year examination programme. As we have been able to maintain a staff of only four officers, we are working in many instances behind schedule. The four School Medical Officers, in addition to being fully extended, are spending long spells away from home touring country districts.

Some economy in the medical examination of school children is to be introduced by adopting the system in practice in other countries, namely, to examine the child in school only three times from entry until the age of 15. The examinations are on entry, at the age of nine, and before leaving. This system is adequate for school medical purposes but, unfortunately, can only be worked in the metropolitan area, as it entails a visit to the school each year and distances between country schools prohibit this.

The system will, however, be adopted in the metropolitan area and the present system of a visit every two years, where practicable, to country schools maintained.

There are 49,000 country school children. Therefore 2·7 Medical Officers are required to examine them every second year. There are 73,000 metropolitan school children to be examined three times in nine years, or 24,333 every year. That requires another 2·7 Medical Officers. Our total minimum requirement to cover the above examinations and extra examinations for special cases is six Medical Officers. We are therefore two Medical Officers short of establishment. Every effort is being made to keep up with the programme but, with the ever increasing number of school children, the task is becoming more and more impossible without the extra staff.

Home Visiting.

This is carried out by the Nursing Staff, to follow up cases notified by the School Medical Officer as requiring special care or medical attention. The purpose of the follow-up system is to ensure that the parents fully appreciate the child's condition and that appropriate remedial measures have been instituted.

School Hygiene.

School Medical Officers report on the sanitation and hygiene conditions of all schools visited. Copies of these reports are sent to the Education Department.

Child Hygiene.

Nursing Sisters visit schools to lecture to groups of children on personal hygiene and to examine the children for cleanliness, pediculosis and skin infections.

Audiometry.

School Medical Officers and Nurses apply audiometric tests to all pupils suspected of some hearing loss and to backward scholars. Those with defective hearing are examined by the School Medical Officers and if necessary at the Commonwealth Acoustic Laboratory.

Parental Interviews.

Any parent wishing to interview the School Medical Officer may do so. This is done by appointment. Frequently School Medical Officers inform parents when an interview is desirable.

Summary of the Year's Work—See Table 1.

Thirty-five thousand eight hundred and sixty-eight children were examined, of which 18,651 were metropolitan and 17,217 in the country. The children were examined in 227 schools.

Fourteen thousand nine hundred and ninety were notified as requiring some attention. Of this number, 4,533 were referred for medical attention, including 2,068 for eye defects. Seven thousand six hundred children were recommended for dental attention.

Reports on 244 children were received from the Commonwealth Acoustic Laboratory. These reports indicate that cases of perceptive deafness such as occurred following the Rubella outbreaks in the 1940's are no longer occurring in any significant number. The vast majority of cases are now of a less serious character. They are mostly defects of the conduction mechanism arising from local infection and inflammation of the middle ear and nasopharynx.

School hygiene and sanitation is improving. The co-operation of the Education Department is restricted only by the limited funds at their disposal. There is still much room for improvement in country schools in the provision of fly wire, septic systems, adequate drinking water and ablution facilities.

In Child Hygiene nurses reported verminous heads in .23 per cent. of State school pupils ; .57 per cent of Convent pupils, and .15 per cent. of kindergarten pupils. These figures apply to the metropolitan area only. Such conditions have been found more frequently in certain categories of migrants and in metropolitan natives. This would account for the disparity in the above percentages.

Verminous heads in half-caste native children in the metropolitan area have been a special problem. It has been met by visiting the home, explaining the position to the parents, and clearing up infestation in the home and on other members of the family.

Conclusion.

The value of a School Medical Service lies in its ability to prevent the spread of infection in schools and to pick up defects that would escape the notice of parents and so never be brought to the attention of a medical practitioner. These are mainly eye, ear, heart and psychological abnormalities. The school medical examination and the home visiting are particularly suited for picking up these defects and, in doing so, our School Medical Service gives a valuable service to the community and its future adult citizens.

The School Medical Service frequently works under difficulties, not the least of which is the absence of suitable examination accommodation in many schools.

To pick up defects in hearing, or cardiac defects amid noise and bustle and vision defects where lighting is inadequate is often impossible. For the sake of the child our School Medical Officers must often err on the side of safety and refer a child for further examination when he is at all suspicious of a defect. Quite often the suspected defect is within the bounds of normality and both parents and private practitioner to whom the child is referred are annoyed at the unnecessary referral. It is essential, however, for the sake of the child that such cases must occur until better facilities are provided in our schools for medical examinations. It is strongly recommended that no school should be planned without adequate provision for medical examinations.

TABLE 1.
EXAMINATION OF METROPOLITAN AND COUNTRY SCHOOL CHILDREN, 1955.

| — | Number Ex- amined. | Number Notified. | Number referred for Medical Atten- tion. | Number referred for Home Atten- tion and Obser- vation. | Number requir- ing Dental Atten- tion. | Skin Complaints. | | Nutrition. | | | Eyes Medical Atten- tion. | Tonsils Medical Atten- tion. |
|-----------------------|--------------------------|---------------------|---|--|---|------------------|-----------|------------|-------------|---------|------------------------------------|---------------------------------------|
| | | | | | | Number. | Per cent. | 3. | Under 3. | Over 3. | | |
| Metropolitan Schools. | | | | | | | | | | | | |
| Boys | 10,444 | 3,596 | 1,095 | 2,482 | 1,147 | .... | .... | 9,799 | 143 | 502 | .... | .... |
| Girls | 8,207 | 2,713 | 827 | 1,756 | 895 | .... | .... | 7,557 | 178 | 472 | .... | .... |
| Total | 18,651 | 6,309 | 1,922 | 4,238 | 2,042 | 1,477 | 7·92 | 17,356 | 321 | 974 | 853 | 91 |
| Country Schools. | | | | | | | | | | | | |
| Boys | 8,859 | 4,342 | 1,230 | 1,418 | 2,861 | .... | .... | 7,810 | 281 | 768 | .... | .... |
| Girls | 8,358 | 4,339 | 1,381 | 1,607 | 2,697 | .... | .... | 6,996 | 334 | 1,028 | .... | .... |
| Total | 17,217 | 8,681 | 2,611 | 3,025 | 5,558 | 1,131 | 6·57 | 14,806 | 615 | 1,796 | 1,215 | 283 |
| State Total. | | | | | | | | | | | | |
| Boys | 19,303 | 7,938 | 2,325 | 3,900 | 4,008 | .... | .... | 17,609 | 424 | 1,270 | .... | .... |
| Girls | 16,565 | 7,052 | 2,208 | 3,363 | 3,592 | .... | .... | 14,553 | 512 | 1,500 | .... | .... |
| Total | 35,868 | 14,990 | 4,533 | 7,263 | 7,600 | 2,608 | 7·27 | 32,162 | 936 | 2,770 | 2,068 | 374 |

Appendix XV.

HEIGHTS AND WEIGHTS OF SCHOOL CHILDREN.

At every school medical examination the height and weight of the child is recorded on his school medical card.

A limited survey of these cards was undertaken and the heights and weights of 7,065 children analysed. This is a much smaller figure than the 47,447 children in the same age groups similarly examined by the Government Statistician in 1940. However, the children of the present survey are representative of the community with the exception of the colleges. Apart from being representative of various sections of the community, no selection occurred which would bias the results. The graduation in the figures and other characteristics indicate that they must resemble the true figures to an extent that the difference is likely to be immaterial. In the 1940 survey the colleges showed a slight advantage in weight and height over the State schools. An effort will be made in the near future to see if this still exists. The absence of the colleges does not materially affect the State averages as the number of pupils therein under the age of 14 is relatively insignificant compared with State totals. Any advantage that present day figures have over the 1940 figures in the way of increased height and weight would, if anything, be further increased if colleges were removed also from the 1940 figures.

For ease of comparison, the figures in Table II have been illustrated by several graphs. Graph I shows average height and weight of children in each age group, 5 to 14 years, in 1955 as compared to 1940 and with the figures given by Simmons for the United States of America in 1944.

These figures are interesting in that they show that in height and weight both boys and girls in Western Australia today start at the age of 5 at approximately the same as children in the United States but soon get left behind in the rate of growth. There has, however, been a remarkable increase in the height and weight of children in Western Australia in comparing 1955 figures with those of 1940.

The second graph is in the form of histograms. Each vertical column indicates the total height or weight of 9 children, consisting of the average child from each year group, 6 years to 14 years.

These, and the Tables from which they are derived, indicate in broad terms that our school children in 1955, both boys and girls, are an inch taller and 7-8 lb. heavier than the children of 1940, but they are $1\frac{1}{4}$ in. shorter and 5 lb. lighter than the American children of 1944.

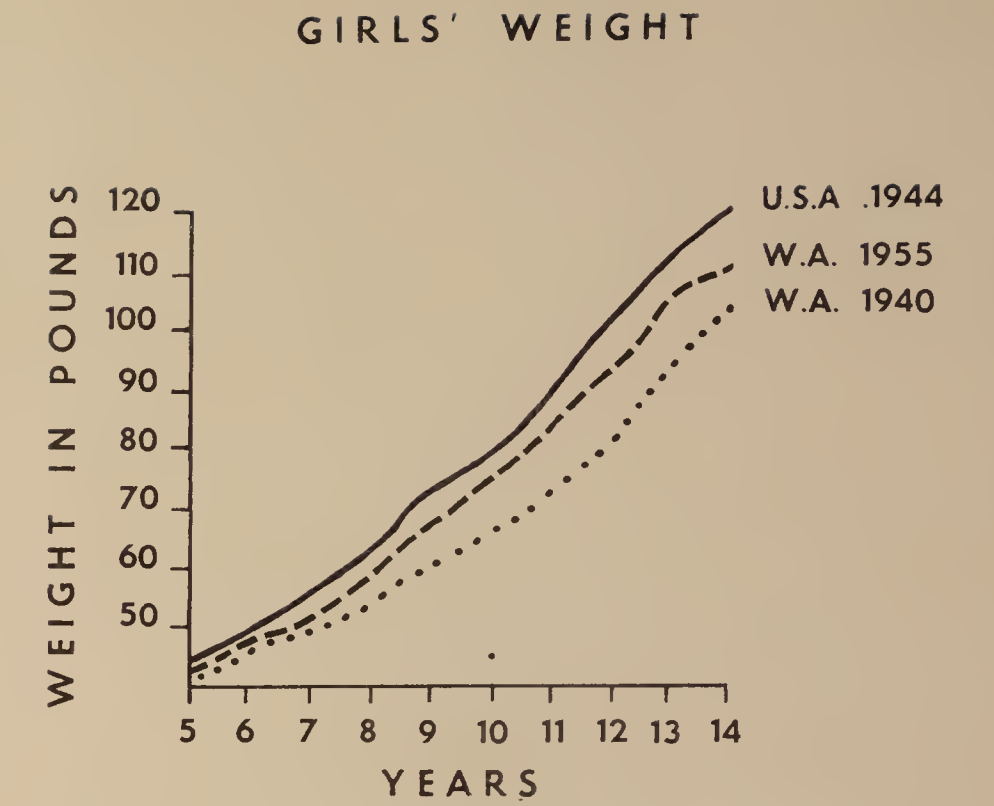
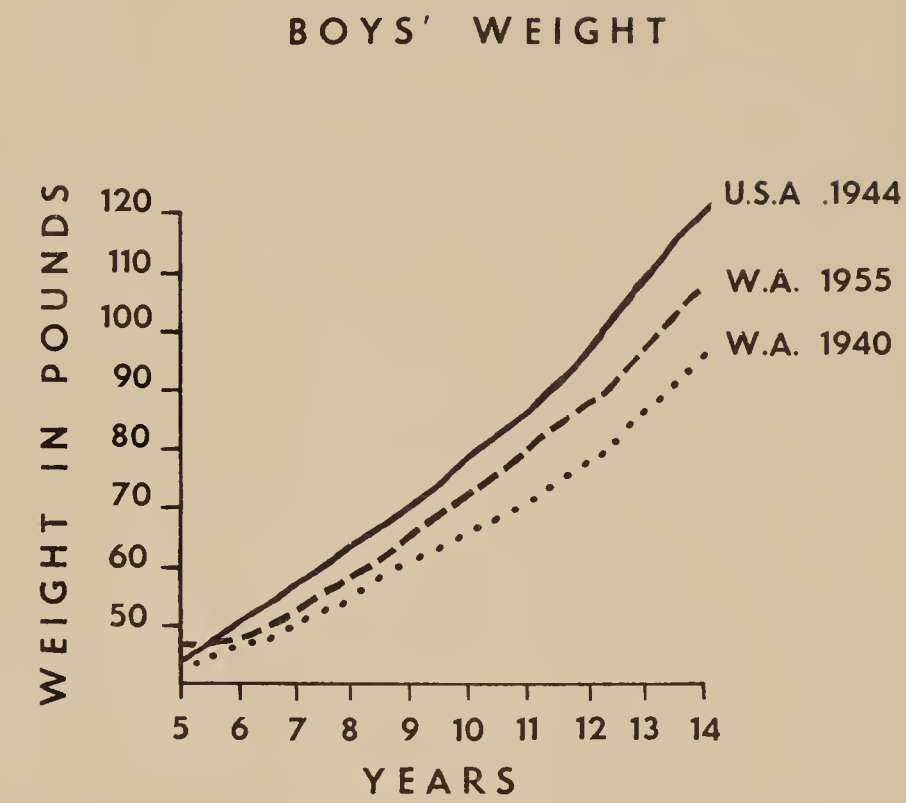
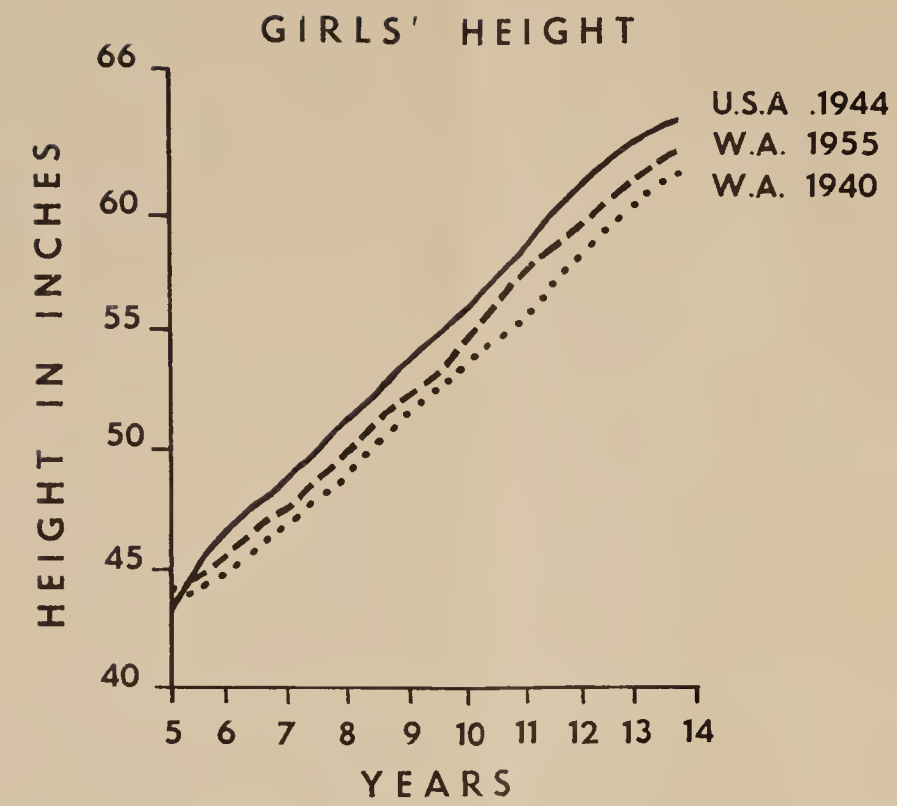
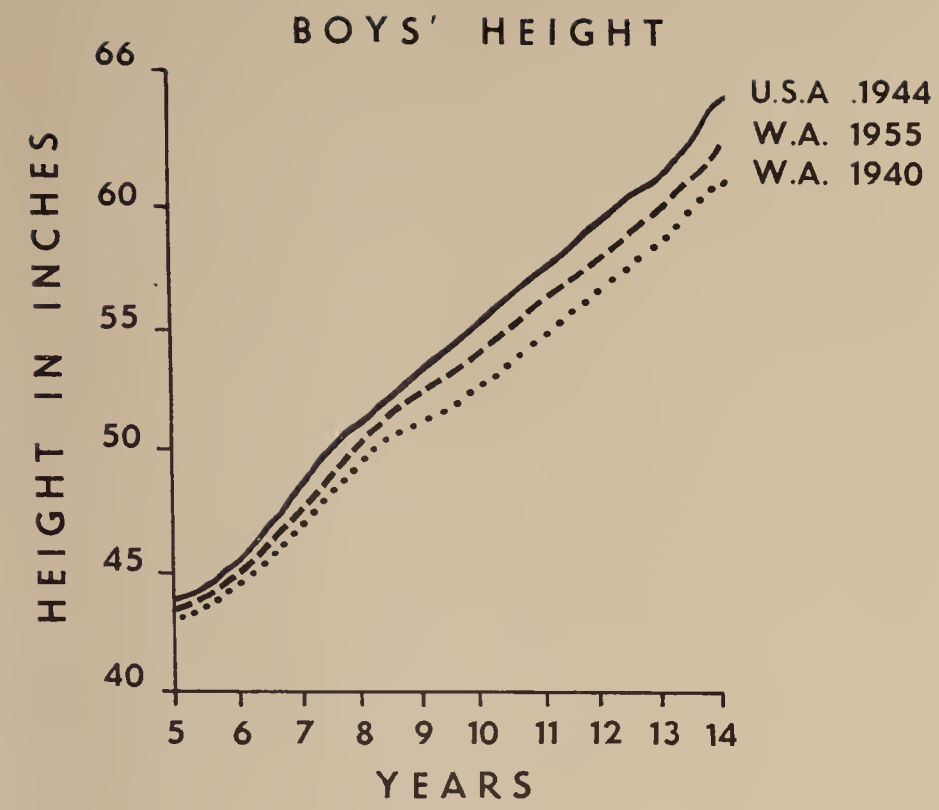
There is little difference in height and weight between metropolitan and country children—what little advantage exists is in favour of the country. Country children were divided up into groups depending on the distance they travelled to school. The miles shown are for the double journey to and from school.

It is often suggested that the long distances covered in school buses have a detrimental effect on the children. School Medical Officers are convinced that this is so in certain cases, particularly in some younger children. On the whole, however, no indication of harm can be obtained from an examination of their heights and weights. In fact, the children who travel distances seem to have a slight advantage over those who live in and around country towns. There are probably other environmental factors which influence this.

The height tables also indicate the earlier adolescence of girls compared with boys. This starts at 10 in girls and by the age of 11 they are taller than boys. The boys start growing rapidly at 12 and pass the girls again at 14.

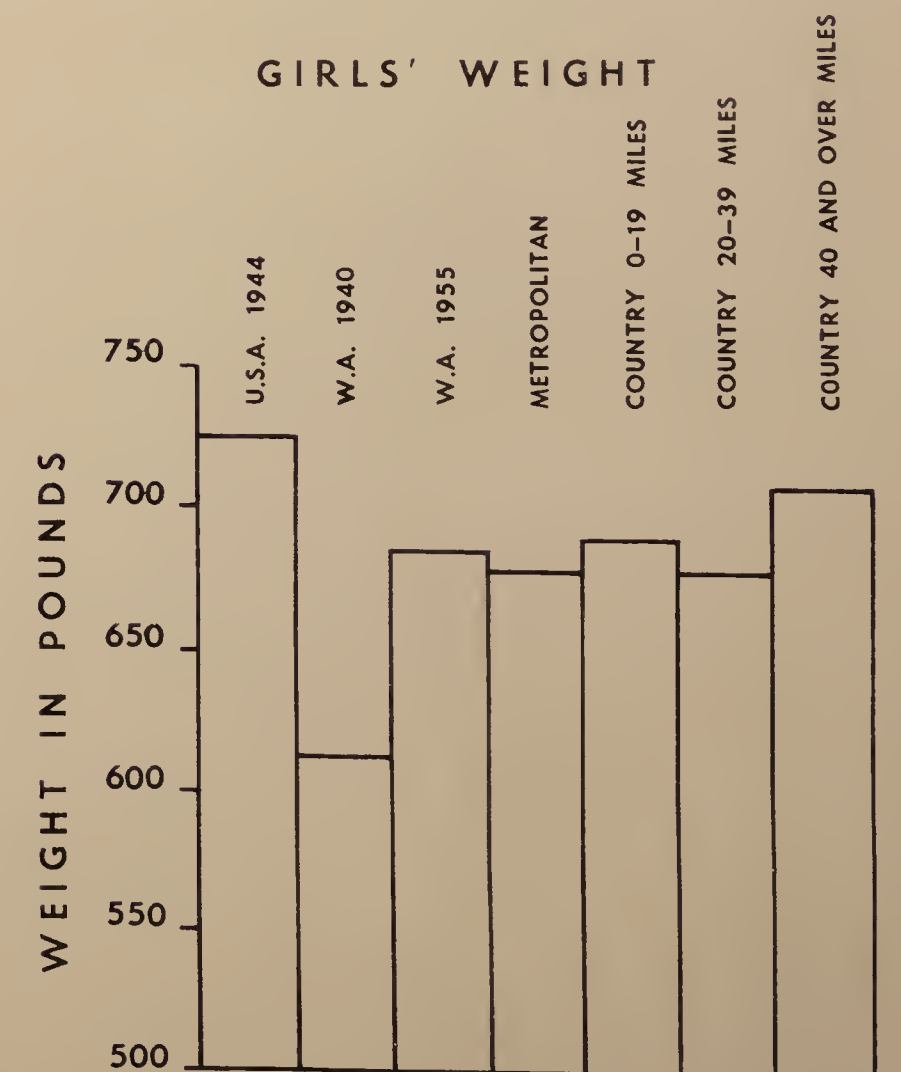
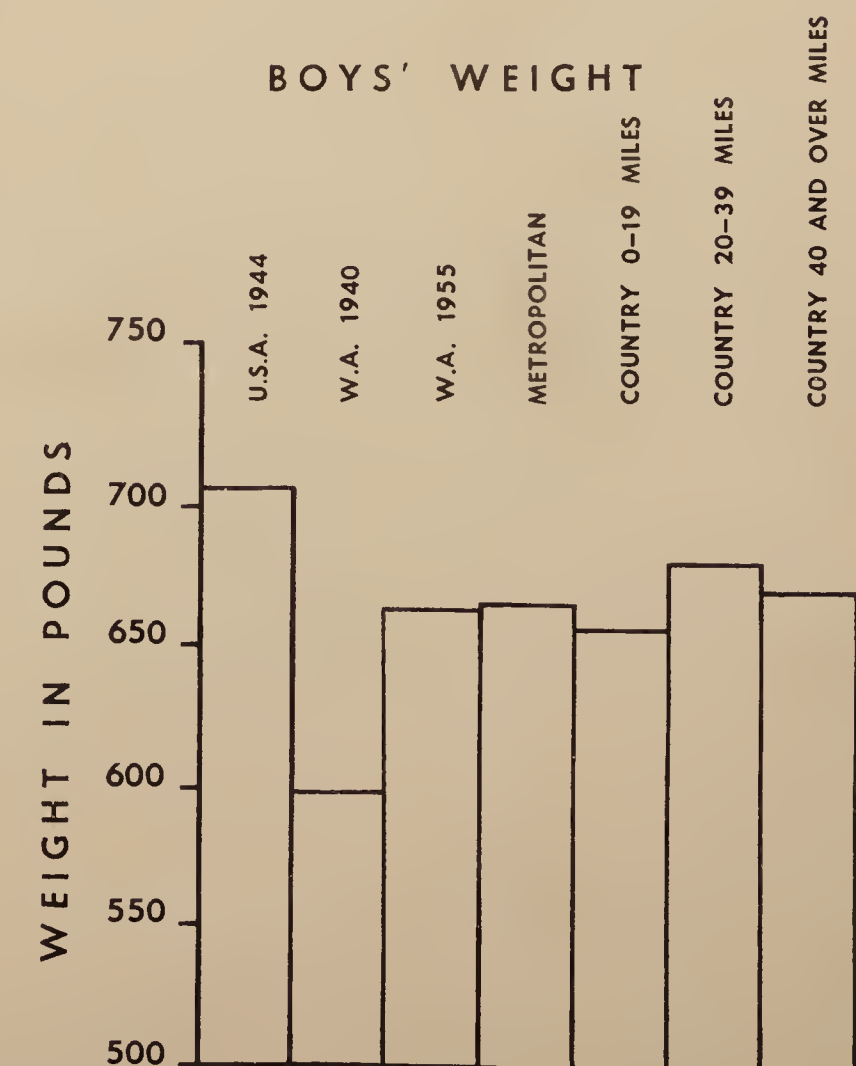
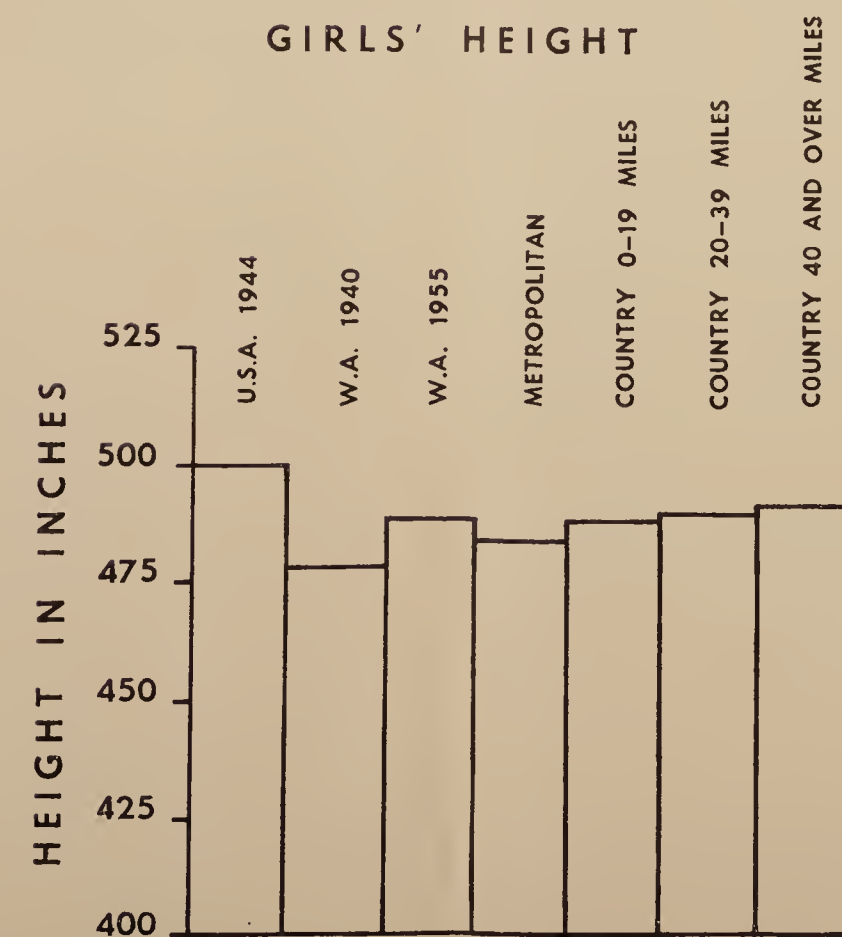
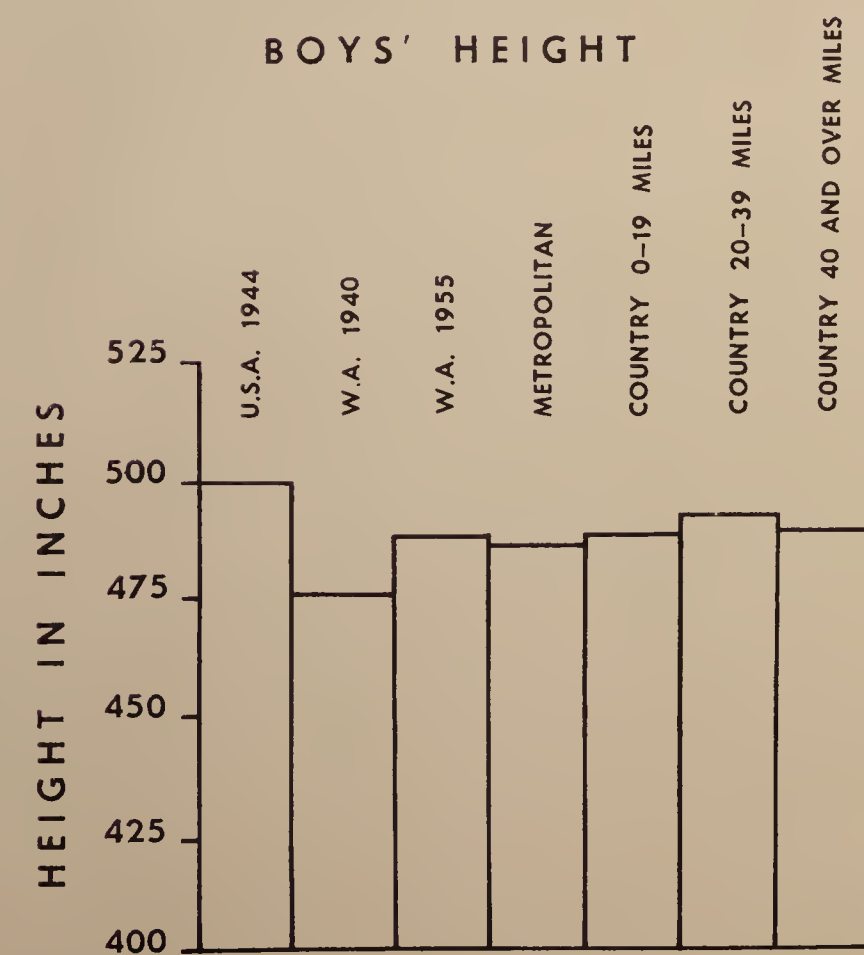
GRAPH 1

**HEIGHT AND WEIGHT OF CHILDREN 5-14 YEARS 1955
COMPARED WITH 1940 SURVEY AND AMERICA 1944**



GRAPH 2

HEIGHT AND WEIGHT OF CHILDREN 6-14 YEARS OF AGE



EACH COLUMN REPRESENTS THE TOTAL HEIGHT OR WEIGHT OF NINE AVERAGE CHILDREN FROM EACH AGE GROUP 6-14 YEARS

Appendix XVI.

The Commissioner of Public Health.

I beg to submit my report on the activities of the School Dental Staff during 1955.

Staff.—There were six appointments and three resignations so that at the end of the year the staff numbered twelve, leaving two vacancies ; this was a better position than had been attained for some time.

Two temporary appontments of private dentists were made in order to attend to the needs of the lower part of the North West ; one was for a very short period, the other for about six months and in both eases a very pressing need was satisfied. With the Victorian Flying Doctor Service at present sending a dental unit on annual tours of the Kimberleys (helped by a subsidy from our Department) and our own, staff, whether permanent men or temporaries, making an annual visit to places further South, the North West is now enjoying a much better service than hitherto.

On a number of occasions I have been consulted by private dentists who wished to make visits to eountry districts ; I advised them of conditions in general and working faciliities and population figures of certain places in particular. On some oceasions we lent items of mobile equipment which were temporarily not being used by our staff. I did this because of numerous requests we get to induce private dentists to go to country towns.

Utilities and Trailers.—Two of our original vehicles had to be written off during the year because of the impraetibility of keeping them roadworthy. One, a utility, has been replaced by a new vehiele and the other a mobile dental surgery, is to be replaced as soon as arrangements have been finalized for the building of a new one.

During the year I gradually relinquished the work I had been doing for many years at Institutions such as the Mental Hospitals, the Prison and Wooroloo. Because of the growth of the School Dental Service and the continual turnover in staff, I was not able to devote very much time to those places lately and the work I had been doing recently was mainly of an emergency nature. The Heads of the Institutions wanted a much fuller service so they are now being catered for by a full time team consisting of dentist, dental nurse and technieian. Modern equipment was also installed in the four largest institutions.

Of reecent years the combination of Institutional work with the administration of the School Dental Service had been more than a full time job and I was able to do it only by taking files home for evening work and by arranging meetings with members of the Staff at weekends. I ean now concentrato on the School Service although I am still available for emergency operative work at Mt. Henry and Sunset. There were about half a dozen such visits to these places during 1956.

In July the W.A. branch of the Australian Dental Association organized a Dental Health week in the Town Hall and as a representative of the Publie Health Department, I was invited to join the Organizing Committee. The exhibits created great interest and drew large crowds.

Following are figures eoneerning the School Dental Staff for 1955 :—

| | | | | | | | |
|--|------|------|------|------|------|------|------|
| Number of country schools visited. | .... | .... | .... | .... | .... | .... | 120 |
| Number of metropolitan schools visited | .... | .... | .... | .... | .... | .... | 13 |
| Number of orphanages visited | .... | .... | .... | .... | .... | .... | 9 |
| Number of children examined | .... | .... | .... | .... | .... | .... | 8585 |
| Number of ehildren treated | .... | .... | .... | .... | .... | .... | 5228 |
| Number of children who needed no treatment | .... | .... | .... | .... | .... | .... | 2330 |
| Number of children who were to reeeive treatment by private dentists | .... | .... | .... | .... | .... | .... | 522 |
| Number of children whose parents were apathetic | .... | .... | .... | .... | .... | .... | 505 |

Operations performed.

| | | | | | | | | |
|---------------------------------|------|------|------|------|------|------|------|-------|
| Silver amalgam fillings | .... | .... | .... | .... | .... | .... | .... | 5866 |
| Copper amalgam fillings | .... | .... | .... | .... | .... | .... | .... | 1191 |
| Cement fillings | .... | .... | .... | .... | .... | .... | .... | 1581 |
| Porecelain fillings | .... | .... | .... | .... | .... | .... | .... | 619 |
| Silver Nitrate Treatments | .... | .... | .... | .... | .... | .... | .... | 544 |
| Other conservative Treatments | .... | .... | .... | .... | .... | .... | .... | 5569 |
| Extractions | .... | .... | .... | .... | .... | .... | .... | 10919 |
| Prophylaxis | .... | .... | .... | .... | .... | .... | .... | 890 |
| Talks, personal interviews etc. | .... | .... | .... | .... | .... | .... | .... | 122 |

A. G. McKENNA,
Senior Dental Officer.

Appendix XVII.

REPORT BY THE CHIEF INSPECTOR (GENERAL)

The Commissioner of Public Health.

Submitted herewith are brief comments on the work of the inspectorial staff.

Environmental Sanitation.

Approval was given for the installation of 8,815 small domestic sewage treatment tanks during the year. These units were mainly for new housing projects or for installation in country towns where adequate water supplies had become available permitting their use.

It has been the practice in the past to permit the installation of septic tanks for the treatment of sewage wastes only, but several experimental tanks have been installed for the reception of both sewage and sullage wastes. Some of these have now been in operation for four years and it appears that their use could overcome the difficulties associated with the disposal of greasy and soapy domestic sullage in separate soak wells or drains.

Apart from a 50 per cent. increase in size, no alteration has been made in the standard design.

Routine inspections were carried out in the North-West and other outlying districts where no qualified health inspector is employed. In many of the places visited the standard of sanitation is not high and progress towards better housing and improved hygiene is slow.

In addition to these general sanitary surveys, inspections have been made of proposed housing subdivisions referred to the Department by the Town Planning Board because there was the possibility that drainage problems or high sub-soil water levels would make the land unsuitable for the erection of dwellings.

With the assistance of officers of the Architectural and Electrical Branches of the Public Works Department, nearly all Public Buildings have been inspected.

In many of these premises it was necessary to serve orders for the rectification of structural or electrical defects and in some instances premises were closed until made safe for public use.

Health Inspectors' Conference.

The Annual Health Inspectors' Conference was held in Perth on 7th and 8th July.

Attendance was very satisfactory—there being 65 Inspectors present at the opening. These represented local authorities throughout the State. Special services including the Milk Board, Factories and Shops Department, Markets Trust and Department of Agriculture, were also represented.

The Minister for Health, the Hon. E. Nulsen, opened the conference and welcomed delegates. Addresses were given as follows :—

The Role of the Inspector in Health Administration (Dr. Linley Henzell, Commissioner of Public Health).

Water Supplies—Interpretation of Bacteriologists' Reports. (Dr. W. S. Davidson, Deputy Commissioner).

Immunisation against Poliomyelitis. (Dr. D. J. R. Snow, Epidemiologist).

Some Aspects of Planning in the Metropolitan Region. (Mr. J. A. Hepburn, Town Planning Commissioner).

Detergents (Mr. R. Turner).

Bacterial Spoilage of Food (Mr. E. Munch-Peterson).

Delegates were taken by bus to Wooroloo Sanatorium where a new sullage-sewage treatment works was explained to them. Experimental septic tanks incorporating domestic waste water disposal were also demonstrated. These units had been in use for about four years, and had given satisfactory results.

Pest Control.

The establishment of a Pest Control Section has been of considerable benefit and has enabled investigation to be made into the efficacy of newer insecticides in the control of insects of public health importance.

Officers of this Section have provided an efficient service for the control of rats and insects in hospitals and other institutions and have formulated approximately 2,000 gallons of spray at cost price for use by Government departments.

C. E. FLOWER,
Chief Inspector (General).

Appendix XVIII.

Commissioner of Public Health.

I have the honour to present the following report on the activities of the Nursing Branch for 1955 :—

Hospital Inspections.

During the year visits were made to Departmental and Non-Departmental Hospitals. A tour of the North-West Hospitals was undertaken. The Murchison District was not visited.

Following the recommendation as advised in the 1954 report, metropolitan maternity hospitals were visited at three-monthly intervals when the essential services, such as Labour Ward, Sterilizing Rooms, Pan Rooms and Nurseries were inspected, in addition to the Midwives Case Book and reports submitted. The general effect of this change in supervision is satisfactory.

Six-monthly inspections of all Private, General and Maternity Hospitals were carried out for registration purposes and the end of the year inspections were carried out accompanied by a Health Inspector, who reported on General Sanitation. It is felt that a more comprehensive and useful survey of hospitals is conducted by the inclusion of the Health Inspector in the routine Hospital Inspections.

Improvements and Additions to Maternity Hospitals.

The licensee of Kensington Hospital complied with the request that the Hospital should be brought up to an acceptable standard.

Improvements to "C" Class Hospitals.

The Committee of the Ministering League Convalescent Home, Mosman Park, effected improvements to the nurses' quarters and alterations providing improved ablution facilities for patients.

New Licences Issued.

The Kwinana Maternity Hospital, Medina, was opened during the year and leased to Sister Enright. The hospital comprises 10 maternity beds. Prior to the opening of the hospital a Domiciliary Nursing Service on a limited scale was carried out by Sister Ruksinas and this relieved the pressure on maternity beds in the Fremantle area.

Hospital Relicensed.

Beaufort Hospital, West Midland, was acquired by Mrs. Wickham, renovated to a limited extent and opened for the accommodation of general patients in the name of The Edgar Reede Hospital. The licence was issued to Sister Pierce.

Private Hospital acquired by the Government.

St. Helen's Hospital, East Fremantle, was purchased by the Government and leased to Sister Bunce.

New Board Hospital.

The Meekatharra Hospital was opened on the 17th September and a licence was issued for four maternity beds.

New Appointments.

Miss M. Sutherland, Diploma of Nursing Administration, College of Nursing Australia, was appointed Matron to the Bunbury District Hospital in January.

Miss M. Yates, Diploma of Nursing Administration, College of Nursing Australia, was appointed Matron to the Busselton District Hospital in January.

Post Graduate Education for Nurses.

During the year two Refresher Courses were held :—

- (a) Matrons' Refresher Week organized by the Royal Australian Nursing Federation in co-operation with the Medical Department. Approximately 30 Matrons attended from country and metropolitan hospitals and the course was very much appreciated. It was regretted that the attendance was restricted but this was due to staff shortage in the country hospitals.
- (b) The State Committee of the College of Nursing Australia conducted a Refresher Week in "Theatre Management." This was highly successful and attended by a large number of nurses from the metropolitan and country hospitals as well as student nurses.

Post Graduate Diploma Courses.

Government Scholarships to the value of £600 were awarded for post graduate study at the College of Nursing, Australia, this sum financing two Nursing Administration and one Midwife Tutor Scholarship.

The Nursing Administration Scholarships were awarded to Miss M. Ebbesen, Matron of the Albany District Hospital, and Miss P. Piesse of the staff of King Edward Memorial Hospital.

Miss D. Tredrea of King Edward Memorial Hospital staff was awarded a Scholarship to undertake the Midwife Tutor Course.

Nursing Bursaries.

The Nursing Bursaries were well advertised and attracted a good deal of attention but, unfortunately, when the school girls and their parents became aware of the conditions attendant on the Bursary Award in respect of service to be given as Trained Nurses, their interest rather waned.

There were 93 applications and when finalized 44 Bursary Awards were made.

Recruitment.

A determined effort was made during the year to stimulate recruitment by the organization by the Medical and Public Health Departments of a Nursing Display and Demonstration at the Royal Show. This display was also taken to Bunbury and Kalgoorlie where it attracted much attention and should result in stimulating interest in nursing amongst school girls and the older age group.

Government Films, in co-operation with the Public Health Department, are producing a film to be used for recruitment. This film should be ready for display early in 1956.

Government School of Nursing.

The Government School of Nursing, 18 Colin Street, West Perth, was opened on 5th December. Up-to-date school rooms have been built affording excellent facilities for teaching.

The original building has been extensively renovated and presents a most attractive appearance. The interior of this nurses' home is very comfortable and should do much to attract young girls to nursing as the Home stands in delightful grounds. The situation of the school is ideal in that it is within a few minutes' travel from the centre of the City but being in a quiet area is away from traffic disturbances.

In order to accommodate the Nurses from the Country Training Schools attending the Block Sessions, Irwin Court was acquired, this building providing adequate accommodation.

General Nursing Training.

Miss E. Harler, the Organiser of Nurse Training, reports that the marked shortage of trained staff at Country Training Schools means that a greater responsibility is placed upon the Student Nurse. This results in frustration of the Student Nurse which, in turn, is a marked contributing factor to the resultant wastage.

The five hospitals grouped with the Government Training Scheme which are engaged in training Nurses for the General Certificate are still deficient in Ward and Departmental Sisters. Clinical Supervisors are required and Kalgoorlie Hospital, which is our largest Training Hospital, requires a Tutor.

Visits Made to Training Schools during 1955.

| | | | | | | |
|------------|------|------|------|------|------|---|
| Busselton | .... | .... | .... | .... | .... | 3 |
| Collie | .... | .... | .... | .... | .... | 3 |
| Geraldton | .... | .... | .... | .... | .... | 1 |
| Kalgoorlie | .... | .... | .... | .... | .... | 2 |
| Merredin | .... | .... | .... | .... | .... | 2 |
| Narrogin | .... | .... | .... | .... | .... | 3 |
| Northam | .... | .... | .... | .... | .... | 2 |

Mount Henry was paid four visits to conduct practical examinations.

The Teaching Staff of the Government School of Nursing wish to express their appreciation for the co-operation they received from all lecturers and also their thanks for the co-operation of the Chest Clinic and Medical and Health Department staffs.

Appointments and Resignations.

Miss K. Roberts, Tutor, resigned on the 15th July, 1955, and Miss M. Humphry commenced as Tutor to the Preliminary Training School in July, 1955.

Report on the Intake and Output of Students.

| Students, 1955. | Intake. | Terminated in Preliminary Training School. | Subsequently. |
|--|---------|--|----------------------------|
| Thirty-fifth Preliminary Training School | 15 | 2 diverted to Nursing Aide | 1 resigned 1 terminated |
| Thirty-sixth Preliminary Training School | 14 | 1 terminated ; 1 diverted to Nursing Aide | 3 resigned |
| Thirty-seventh Preliminary Training School | 13 | .... | 1 resigned |
| Thirty-eighth Preliminary Training School | 6 | 1 married ; 1 diverted to Nursing Aide. | |

First Professional Examination.

| | | | | | | Passes. | |
|------------------|------|------|------|------|------|---------|---|
| April, 1955 : | | | | | | | |
| Kalgoorlie | .... | .... | .... | .... | .... | 6 | 1 failed Anatomy and Physiology. |
| Northam | .... | .... | .... | .... | .... | 3 | 1 failed Anatomy and Physiology. 1 failed 2 subjects—Anatomy and Physiology, and Personal and Communal Health. |
| Geraldton | .... | .... | .... | .... | .... | 1 | .... |
| Narrogin | .... | .... | .... | .... | .... | 2 | .... |
| August, 1955 : | | | | | | | |
| Kalgoorlie | .... | .... | .... | .... | .... | 6 | .... |
| Northam | .... | .... | .... | .... | .... | 4 | .... |
| Geraldton | .... | .... | .... | .... | .... | 1 | .... |
| December, 1955 : | | | | | | | |
| Kalgoorlie | .... | .... | .... | .... | .... | 5 | .... |
| Northam | .... | .... | .... | .... | .... | 3 | .... |
| Geraldton | .... | .... | .... | .... | .... | 2 | .... |
| Collic | .... | .... | .... | .... | .... | 2 | .... |
| Narrogin | .... | .... | .... | .... | .... | 1 | .... |

Nurses Registration Board Final Examination.

| | | | | | | Passes. | |
|------------------|------|------|------|------|------|---------------|------------------|
| February, 1955 : | | | | | | | |
| Kalgoorlie | .... | .... | .... | .... | .... | 4 | .... |
| Geraldton | .... | .... | .... | .... | .... | 2 | 1 failed Surgery |
| Northam | .... | .... | .... | .... | .... | 3 | 1 failed Surgery |
| June, 1955 : | | | | | | | |
| Kalgoorlie | .... | .... | .... | .... | .... | 8 (2 credits) | |
| Geraldton | .... | .... | .... | .... | .... | 2 | .... |
| Northam | .... | .... | .... | .... | .... | 2 | .... |
| October, 1955 : | | | | | | | |
| Kalgoorlie | .... | .... | .... | .... | .... | 6 (2 credits) | .... |
| Geraldton | .... | .... | .... | .... | .... | 2 (1 credit) | .... |

Recruitment.

Visits were made to the following State and Secondary Schools :—

| | | |
|------------|--------------------|---------------------|
| Northam | Wagin | Denmark High School |
| Geraldton | Brookton | Pemberton |
| Kalgoorlie | Pingelly | Manjimup |
| Collie | Katanning | Bridgetown |
| Narrogin | Kojonup | Boyup Brook |
| Busselton | Tambellup | Donnybrook |
| Bunbury | Mount Barker | Harvey |
| York | Albany High School | Pinjarra |
| Beverley | | |

Country applicants for the Nursing Bursary were interviewed by Miss Harler during her tour of country areas, while Miss Harler makes use of any visual aids available during her school visits and pamphlets which have been prepared by the Medical Department are freely distributed.

The matrons of the larger country hospitals have co-operated very well in entertaining school children at the Hospital.

In concluding this report, I wish to express my thanks to you, Sir, for your kind encouragement in my work and to record my appreciation of the loyal co-operation given by Miss D. Railton, Assistant Matron, and of the work of Miss E. Harler, Organiser of Nurse Training.

PHYLLIS F. LEE,
Principal Matron.

Appendix XIX.

NURSES' REGISTRATION BOARD.

Eleven meetings were held at the Department of Public Health.

The number of nurses in the various divisions of the register, and nursing aides on the roll, whose registrations or enrolments were in force at 31st January (the date on which the register and roll were taken out for publication) was :—

| | | | | | | | |
|-------------------|------|------|------|------|------|------|-------|
| General | .... | .... | .... | .... | .... | .... | 2,078 |
| Midwifery | .... | .... | .... | .... | .... | .... | 1,050 |
| Infant Health | .... | .... | .... | .... | .... | .... | 192 |
| Mental .... | .... | .... | .... | .... | .... | .... | 48 |
| Tuberculosis .... | .... | .... | .... | .... | .... | .... | 45 |
| Mothercraft .... | .... | .... | .... | .... | .... | .... | 25 |
| Nursing Aides | .... | .... | .... | .... | .... | .... | 65 |
| Dental .... | .... | .... | .... | .... | .... | .... | 2 |

In April regulations relating to the training and examination of dental nurses under the amending Act of 1954, were finalised, and under section 5 (5f) (vii) and (viii) eight dental nurses were able to effect registration.

Twenty-five examinations were conducted as follows :—

| | | | | | | | |
|--------------------|------|------|------|------|------|------|---|
| General | .... | .... | .... | .... | .... | .... | 3 |
| Midwifery | .... | .... | .... | .... | .... | .... | 3 |
| Mental .... | .... | .... | .... | .... | .... | .... | 3 |
| Tuberculosis .... | .... | .... | .... | .... | .... | .... | 3 |
| Mothercraft .... | .... | .... | .... | .... | .... | .... | 3 |
| Nursing Aides | .... | .... | .... | .... | .... | .... | 3 |
| Dental .... | .... | .... | .... | .... | .... | .... | 1 |
| First Professional | .... | .... | .... | .... | .... | .... | 3 |
| Educational .... | .... | .... | .... | .... | .... | .... | 3 |

Five applications for restoration of name to the midwives' register were approved under section 11 (3) of the Act.

Appendix XX.

INCIDENCE AND MORTALITY OF NOTIFIABLE INFECTIOUS DESEASES.

| Diseases Notifiable. | 1952. | | | 1953. | | | 1954. | | | 1955. | | |
|-------------------------------|------------------|---------------------|---------|------------------|---------------------|---------|------------------|---------------------|---------|------------------|---------------------|---------|
| | Cases Re-ported. | Amended Diag-nosis. | Deaths. | Cases Re-ported. | Amended Diag-nosis. | Deaths. | Cases Re-ported. | Amended Diag-nosis. | Deaths. | Cases Re-ported. | Amended Diag-nosis. | Deaths. |
| Acute Rheumatism | 9 | 9 | .... | 24 | 24 | (C) 4 | 60 | 60 | (C) 8 | 39 | 39 | (C) 8 |
| Amoebiasis | 5 | 5 | .... | .... | .... | .... | 8 | 8 | .... | 2 | 2 | 1 |
| Ankylostomiasis | 8 | 8 | .... | 2 | 2 | .... | 2 | 2 | .... | 1 | 1 | 1 |
| Brucellosis | 6 | 6 | .... | 7 | 7 | .... | 8 | 8 | .... | 5 | 5 | .... |
| Chorea | 3 | 3 | .... | 6 | 6 | 1 | 6 | 6 | .... | 4 | 4 | .... |
| Dengue Fever .... | .... | .... | .... | 1 | 1 | .... | 2 | 2 | .... | .... | .... | .... |
| Diphtheria | 156 | 124 | 2 | 195 | 170 | 1 | 127 | 119 | 3 | 547 | 480 | 6 |
| Dysentery (Amoebic) | 6 | 6 | .... | 6 | 6 | .... | 6 | 6 | 1 | 7 | 7 | 1 |
| Dysentery (Bacillary) | 72 | 72 | (B) 1 | 42 | 42 | .... | 42 | 42 | 1 | 127 | 127 | .... |
| Encephalitis, Lethar-gic .... | .... | .... | .... | 3 | 3 | .... | .... | .... | 3 | .... | .... | 1 |
| Erythema Nodosum .... | .... | .... | .... | 2 | 2 | .... | 1 | 1 | .... | .... | .... | .... |
| Hydatid .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | 1 | 1 |
| Infantile Diarrhoea | 15 | 15 | (A) 17 | 4 | 4 | (A) 8 | 29 | 29 | (A) 22 | 30 | 30 | 9 |
| Infective Hepatitis | 654 | 654 | 9 | 443 | 443 | 1 | 166 | 165 | 4 | 254 | 254 | 7 |
| Lead Poisoning | 4 | 4 | .... | 5 | 5 | 1 | 2 | 2 | .... | 3 | 3 | .... |
| Leprosy | 37 | 37 | .... | 26 | 26 | 1 | 47 | 47 | .... | 29 | 29 | .... |
| Malaria | 13 | 13 | .... | 25 | 25 | .... | 29 | 29 | 1 | 5 | 5 | .... |
| Meningococcal Infec-tion | 35 | 35 | 4 | 25 | 25 | 6 | 48 | 48 | 3 | 13 | 13 | 4 |
| Paratyphoid | 3 | 3 | 1 | 1 | 1 | .... | 1 | 1 | .... | 4 | 4 | .... |
| Poliomyelitis | 42 | 37 | 2 | 49 | 44 | 3 | 450 | 436 | 4 | 34 | 33 | 1 |
| Pleural Effusion | 21 | 20 | .... | 9 | 8 | .... | 4 | 4 | 1 | 12 | 12 | .... |
| Puerperal Fever | 3 | 3 | .... | 3 | 3 | .... | 2 | 2 | .... | 5 | 5 | .... |
| Purulent Ophthalmia | 58 | 58 | .... | 163 | 163 | .... | 52 | 52 | .... | 35 | 35 | .... |
| Rubella | 147 | 147 | .... | 1,053 | 1,053 | .... | 627 | 627 | .... | 227 | 227 | .... |
| Salmonella Infection | 22 | 22 | .... | 17 | 17 | .... | 32 | 32 | 1 | 58 | 58 | .... |
| Scarlet Fever | 128 | 125 | .... | 94 | 93 | .... | 92 | 91 | .... | 69 | 68 | 1 |
| Tetanus | 13 | 13 | 6 | 12 | 12 | 6 | 4 | 4* | 8 | 9 | 9 | 5 |
| Trachoma | 1 | 1 | .... | 1,201 | 1,201 | .... | 3,686 | 3,686 | .... | 1,470 | 1,470 | .... |
| P.T.B. | 524 | 488 | 75 | 376 | 370 | 43 | 368 | 344 | 57 | 408 | 401 | 31 |
| Other T.B. | 50 | 49 | 7 | 34 | 33 | 3 | 26 | 34 | 4 | 39 | 39 | 2 |
| Typhoid Fever | 6 | 6 | 1 | 7 | 7 | .... | 12 | 12 | 1 | 13 | 13 | 1 |
| Typhus Fever | 25 | 25 | 1 | 18 | 18 | .... | 19 | 19 | .... | 22 | 22 | 1 |

Deaths exclude Full-blood Aborigines.

(A) Gastro-enteritis and Colitis (except ulceration) under two years and diarrhoea of newborn.

(B) Also one death from other or unspecified dysentery.

(C). Rheumatic Fever.

* Notifications incomplete.

Appendix XXI.

MATERNAL MORTALITY.

| Period. | | | | | | | Average Live Births. | Average Maternal Deaths. | Average. Rate. |
|-----------|------|------|------|------|------|------|----------------------|--------------------------|----------------|
| 1901-1905 | .... | .... | .... | .... | .... | .... | 6,681 | 28·0 | 4·19 |
| 1906-1910 | .... | .... | .... | .... | .... | .... | 7,691 | 43·4 | 5·64 |
| 1911-1915 | .... | .... | .... | .... | .... | .... | 8,844 | 39·4 | 4·46 |
| 1916-1920 | .... | .... | .... | .... | .... | .... | 7,727 | 41·4 | 5·36 |
| 1921-1925 | .... | .... | .... | .... | .... | .... | 8,056 | 34·2 | 4·25 |
| 1926-1930 | .... | .... | .... | .... | .... | .... | 8,748 | 46·8 | 5·35 |
| 1931-1935 | .... | .... | .... | .... | .... | .... | 8,062 | 35·4 | 4·39 |
| 1936-1940 | .... | .... | .... | .... | .... | .... | 8,877 | 32·4 | 3·65 |
| 1941-1945 | .... | .... | .... | .... | .... | .... | 10,408 | 24·4 | 2·34 |
| 1946-1950 | .... | .... | .... | .... | .... | .... | 13,130 | 21·4 | 1·63 |
| 1951-1955 | .... | .... | .... | .... | .... | .... | 15,724 | 13·8 | 0·88 |

| Year. | Live Births. | Deaths From. | | | | | | | | | |
|-----------|--------------|------------------------|-------|-----------------------------|-------|-----------|-------|--|-------|---|-------|
| | | Puerperal Septicaemia. | | Other Puerperal Infections. | | Abortion. | | All other Complications of Pregnancy and of the Puerperal State. | | All Compli- cations of Pregnancy and the Puerperal State. | |
| | | No. | Rate. | No. | Rate. | No. | Rate. | No. | Rate. | No. | Rate. |
| 1943 | 10,481 | 2 | 0·19 | 1 | 0·10 | 3 | 0·29 | 17 | 1·62 | 23 | 2·19 |
| 1944 | 10,870 | 2 | 0·18 | 2 | 0·18 | 5 | 0·46 | 18 | 1·66 | 27 | 2·48 |
| 1945 | 10,672 | .... | .... | 2 | 0·19 | 5 | 0·47 | 13 | 1·22 | 20 | 1·87 |
| 1946 | 12,105 | .... | .... | 3 | 0·25 | 5 | 0·41 | 18 | 1·49 | 26 | 2·15 |
| 1947 | 12,874 | 1 | 0·08 | 1 | 0·08 | 8 | 0·62 | 22 | 1·71 | 32 | 2·49 |
| 1948 | 12,981 | 2 | 0·15 | 4 | 0·31 | 1 | 0·08 | 13 | 1·00 | 20 | 1·55 |
| 1949 | 13,511 | .... | .... | 2 | 0·15 | 3 | 0·22 | 11 | 0·81 | 16 | 1·18 |
| 1950 | 14,228 | .... | .... | 2 | 0·14 | 1 | 0·07 | 12 | 0·84 | 13 | 0·91 |
| 1951 | 14,794 | .... | .... | 2 | 0·14 | 3 | 0·20 | 11 | 0·74 | 16 | 1·08 |
| 1952 | 15,413 | .... | .... | 3 | 0·19 | 3 | 0·19 | 12 | 0·78 | 18 | 1·17 |
| 1953 | 15,862 | .... | .... | .... | .... | 1 | 0·06 | 8 | 0·50 | 9 | 0·57 |
| 1954 | 15,928 | .... | .... | .... | .... | 5 | 0·31 | 7 | 0·44 | 12 | 0·75 |
| 1955 | 16,623 | .... | .... | .... | .... | 1 | 0·06 | 13 | 0·78 | 14 | 0·84 |

All rates per thousand live births.

Appendix XXII.

STILLBIRTH AND INFANT MORTALITY RATES.

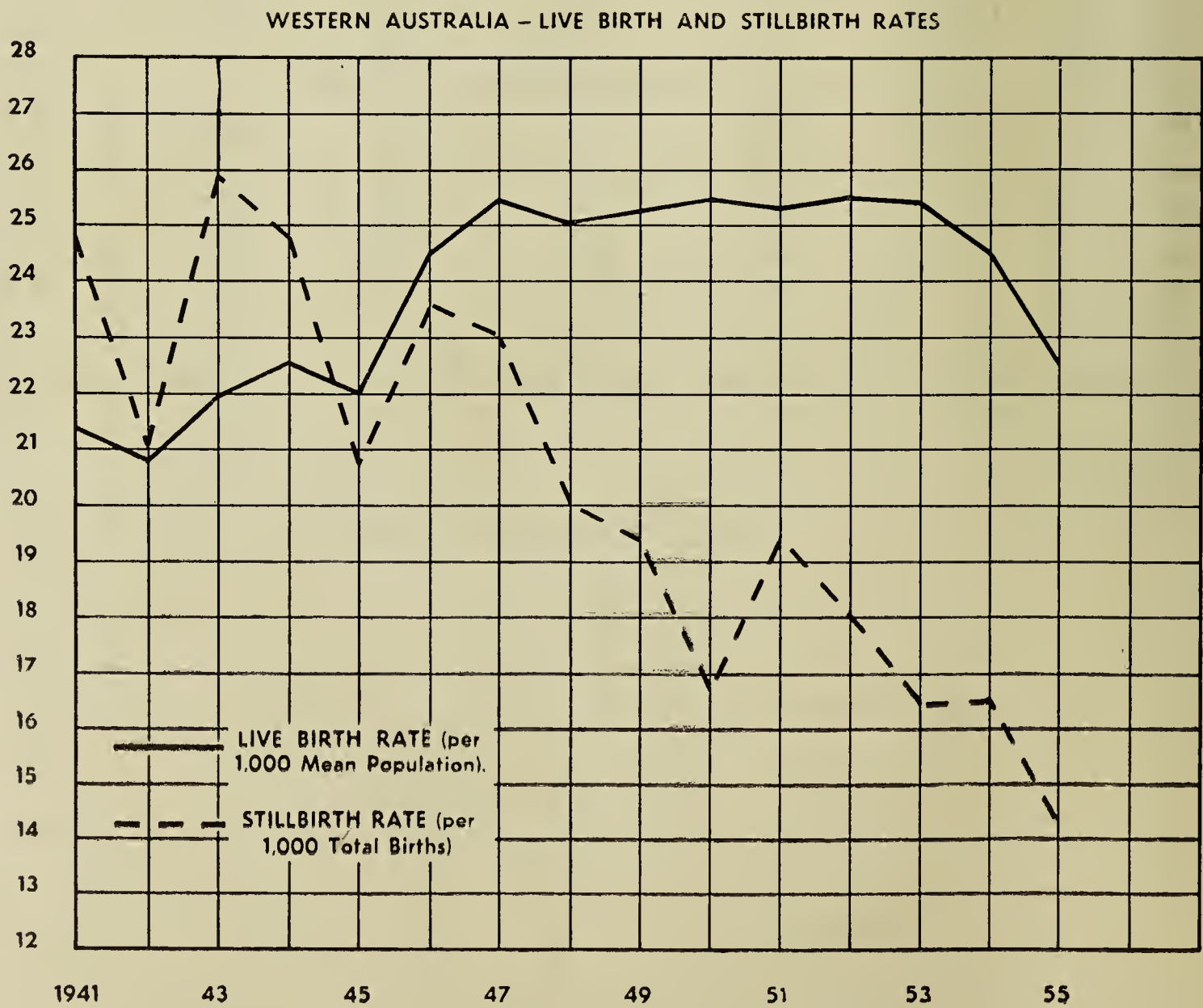
| Year. | Total Births including Stillbirths. | Stillbirth Rates. | Neo-Natal Rates. | | Total Mortality Rates under One Year. | Other Post Natal Rates Over One Month and Under One Year. | |
|-------|---|----------------------|--------------------|---------------------|---|--|------|
| | | | Under One Week. | Under One Month. | | | |
| 1926 | | 8,534 | 27.4 | .... | 27.6 | 48.0 | 20.4 |
| 1927 | | 8,708 | 26.0 | .... | 23.0 | 44.7 | 21.7 |
| 1928 | | 8,981 | 30.9 | .... | 23.1 | 35.5 | 12.4 |
| 1929 | | 9,316 | 28.4 | 18.8 | 25.8 | 54.6 | 28.8 |
| 1930 | | 9,456 | 27.0 | 18.0 | 23.5 | 46.5 | 23.0 |
| 1931 | | 8,777 | 26.0 | 20.1 | 26.6 | 40.5 | 13.9 |
| 1932 | | 8,175 | 25.7 | 21.02 | 25.2 | 43.5 | 18.3 |
| 1933 | | 8,105 | 29.4 | 18.1 | 22.5 | 35.8 | 13.3 |
| 1934 | | 8,029 | 29.2 | 19.3 | 24.8 | 38.8 | 14.0 |
| 1935 | | 8,377 | 30.8 | 20.6 | 24.8 | 39.0 | 14.2 |
| 1936 | | 8,730 | 28.9 | 19.6 | 24.8 | 41.0 | 16.2 |
| 1937 | | 8,850 | 27.2 | 16.8 | 21.2 | 36.5 | 15.3 |
| 1938 | | 9,325 | 23.9 | 16.6 | 19.1 | 33.1 | 14.0 |
| 1939 | | 9,249 | 23.0 | 16.5 | 19.7 | 40.0 | 20.3 |
| 1940 | | 9,363 | 25.9 | 20.5 | 24.9 | 43.0 | 18.1 |
| 1941 | | 10,375 | 24.8 | 15.1 | 18.1 | 34.4 | 15.7 |
| 1942 | | 10,109 | 20.6 | 17.1 | 20.3 | 36.2 | 15.9 |
| 1943 | | 10,759 | 25.8 | 17.1 | 21.0 | 31.8 | 10.8 |
| 1944 | | 11,144 | 24.8 | 18.6 | 21.0 | 32.0 | 11.0 |
| 1945 | | 10,896 | 20.6 | 18.0 | 20.0 | 28.9 | 8.9 |
| 1946 | | 12,398 | 23.6 | 17.1 | 20.6 | 30.3 | 9.6 |
| 1947 | | 13,178 | 23.0 | 16.9 | 19.4 | 30.2 | 13.2 |
| 1948 | | 13,197 | 20.1 | 16.9 | 18.7 | 25.0 | 8.4 |
| 1949 | | 13,779 | 19.4 | 16.2 | 19.0 | 25.9 | 6.8 |
| 1950 | | 14,468 | 16.6 | 16.2 | 18.0 | 26.7 | 8.6 |
| 1951 | | 15,091 | 19.7 | 16.2 | 19.7 | 28.2 | 8.5 |
| 1952 | | 15,697 | 18.1 | 15.5 | 17.7 | 24.5 | 6.8 |
| 1953 | | 16,130 | 16.6 | 13.4 | 16.2 | 23.4 | 7.3 |
| 1954 | | 16,198 | 16.7 | 14.2 | 15.8 | 22.2 | 6.4 |
| 1955 | | 16,862 | 14.2 | 13.3 | 15.8 | 22.1 | 6.3 |

In above table all rates are calculated in deaths per 1,000 of total births, including stillbirths.

Appendix XXIII.

WESTERN AUSTRALIA—STILLBIRTH AND BIRTH RATES.

| Year. | Mean Population. | Live Births. | | Still Births. | |
|-------|---------------------|--------------|---------------------------------------|---------------|------------------------------------|
| | | Number. | Rate per 1,000 Mean Population. | Number. | Rate per 1,000 Total Births. |
| 1941 | 473,968 | 10,118 | 21·35 | 257 | 24·77 |
| 1942 | 476,619 | 9,901 | 20·77 | 208 | 20·57 |
| 1943 | 476,745 | 10,481 | 21·98 | 278 | 25·84 |
| 1944 | 481,498 | 10,870 | 22·58 | 274 | 24·59 |
| 1945 | 487,510 | 10,672 | 21·89 | 224 | 20·56 |
| 1946 | 492,771 | 12,105 | 24·57 | 293 | 23·63 |
| 1947 | 502,951 | 12,874 | 25·60 | 304 | 23·07 |
| 1948 | 514,621 | 12,931 | 25·13 | 266 | 20·16 |
| 1949 | 532,603 | 13,511 | 25·37 | 268 | 19·45 |
| 1950 | 557,878 | 14,228 | 25·50 | 240 | 16·59 |
| 1951 | 580,317 | 14,794 | 25·49 | 297 | 19·68 |
| 1952 | 600,615 | 15,413 | 25·66 | 284 | 18·09 |
| 1953 | 621,034 | 15,862 | 25·54 | 268 | 16·62 |
| 1954 | 640,140 | 15,928 | 24·88 | 270 | 16·67 |
| 1955 | 658,747 | 16,623 | 22·44 | 239 | 14·38 |



Appendix XXIV.

MEAT INSPECTION FOR THE YEAR ENDED 31ST DECEMBER, 1955.

[illegible]

Appendix XXV.

REVENUE AND EXPENDITURE FOR YEAR 1955.

REVENUE.

| | £ | s. | d. |
|---|-----------------|-----------|----------|
| Licence Fees | 44 | 5 | 0 |
| Meat Inspection Fees | 18,230 | 16 | 8 |
| Fish Inspection Fees | 762 | 19 | 1 |
| Pathological Laboratory | £,233 | 11 | 9 |
| Sanitation Refunds | 253 | 5 | 8 |
| Inspection of Plans (Septic Tanks) | 8,973 | 19 | 6 |
| Miscellaneous | 4,289 | 5 | 6 |
| Nurses and Midwives Registration and Examination Fees | 1,904 | 15 | 9 |
| Local Health Authority Recoups | | | |
| T.B. Diagnosis (Generally) | 375,497 | 17 | 0 |
| T.B. Diagnosis (Wooroloo) | 33,433 | 17 | 2 |
| Argentine Ants (Sale D.D.T. and Baits) | | | |
| Health Supervision Charges | 325 | 0 | 0 |
| Maintenance Northern Territory Natives, Derby Leprosarium | Dr. 146 | 16 | 9 |
| Baby Patterns | 23 | 0 | 0 |
| Hospital Benefits—Lepers | Dr. 2,611 | 4 | 0 |
| Supplementary and Organisation Benefits—Lepers | Dr. 1,286 | 12 | 0 |
| Pharmaceutical Benefits—Lepers | 472 | 4 | 10 |
| Poliomyelitis After Care | 1,748 | 13 | 3 |
| | <u>£448,178</u> | <u>18</u> | <u>5</u> |

Note.—Dr. items (Leprosy) now credited to Native Affairs Department.

EXPENDITURE.

| | | | |
|--|-----------------|----------|----------|
| Salaries (including T.B.) | 392,315 | 2 | 9 |
| Payments Local Health Authorities | 20,576 | 18 | 0 |
| School Hygiene | 9,517 | 1 | 11 |
| Travelling and Transport | 3,957 | 9 | 6 |
| Postage and Telephones | 1,959 | 4 | 8 |
| Laboratory | 12,437 | 10 | 6 |
| Venereal Diseases | 2,840 | 8 | 8 |
| Miscellaneous | 12,415 | 11 | 2 |
| Infant Welfare Centres | 69,271 | 11 | 8 |
| Maintenance and Transport of Lepers | 22,754 | 18 | 11 |
| Medical Officer and School Dentists Travel | 6,390 | 9 | 5 |
| Diphtheria Immunisation | 49 | 8 | 9 |
| T.B. Clinics | 246,167 | 11 | 4 |
| Poliomyelitis | 22,738 | 5 | 3 |
| Sanitation Government Buildings | 16,075 | 13 | 2 |
| Total Expenditure | <u>£839,467</u> | <u>5</u> | <u>8</u> |